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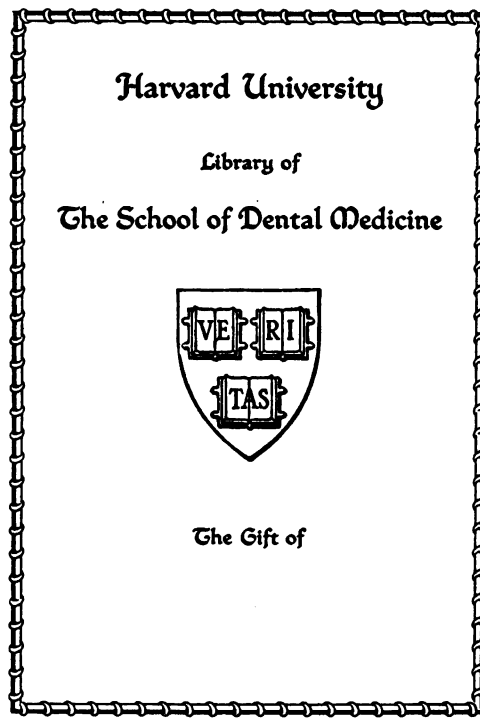

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VOLUME IV.

SAINT LOUIS:
BOWMAN & MATTHEWS, PRINTERS AND PUBLISHERS, 414 N. THIRD STREET.
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The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] JANUARY, 1872. [No. 1.

From Transactions of the Odontological Society [June, 1871].

ON THE DEVELOPMENT OF THE ENAMEL IN THE TEETH OF MAMMALS,

As Illustrated by the Various Stages of Growth Demonstrable in the Evolution of the Fourth Molar of a young Elephant (elephas indicus) and of the Incisor Teeth in the Fœtal Calf (bos taurus).

By PROFESSOR ROLLESTON.

GENTLEMEN: A naked-eye examination of a spirit preparation of a developing molar tooth of an elephant appears to be sufficient to show that in development the dentine takes precedence of the enamel in the tooth. In such a tooth a certain number of the more anteriorly placed denticles may be seen to be formed of caps of dentine, of a yellowish color, encrusted, for various distances from their apices downward, with opaque white deposits of enamel. Posteriorly to the denticles of this composite character we see a few denticles consisting of dentine alone, upon which no deposition of enamel has as yet taken place; and, most posteriorily of all, we see processes of the dentinal pulp, which, as yet, are devoid of any covering of dentine.

If, in the second place, we proceed to take note of the capsular processes in which the denticles are enclosed, we shall observe that the inner (reflected) surfaces of certain of these capsules are roughened over by deposit, in correspondence with the enamel deposit already noticed on the denticles which they surround.

The deposit on the inner surface of the capsule is soft, and consists of cylindriform cells packed closely together, and forming, when their interior surface is looked down upon, a mosaic arrangement by their apposition, whilst in the immediate neighborhood of their exterior (their still attached) surface, numerous blood-vessels are seen ramifying. There can be no doubt that we have here the often-described proximal, and, as yet, but imperfectly calcified ends of the enamel-cells, which have broken away in the preparation from the more thoroughly calcified segments constituting the enamel deposit on the denticles. It is, in fact, the layer which has been supposed to be at once the functionless "membrana præformativa" of Raschkow, and the functionally protective, however otherwise physiologically inert, "*cuticula dentis*," or "Nasmyth's membrane."

If now, in the third place, we take a thin microscopic section of the anterior part of the lower jaw of a fœtal calf, made in a sagittal direction, so as to show several developing teeth of various ages *in situ*, we are enabled easily to recognize the representatives of the various structures visible to the naked eye in the molar tooth of the elephant, and to harmonize the apparently conflicting statements which have been made as to the relations held by the tissue forming the enamel prisms, on the one hand, to the stellate tissue of the non-vascular enamel organ, and, on the other, to the vascular tooth-capsule. In such a section of a tooth, in which the enamel has already begun to be deposited, we can see the factor of the enamel organ, which is made up of stellate, loosely compacted anastomosing cells, the so-called "spongy substance," occupying or forming a triangular area with the apex upward. The apex of this triangular space marks the lowest level to which the formation of enamel has advanced in its progress downward from the summit of the tooth. Above this point, or, in other words, where the formation of the enamel has called for an abundant supply of mineral matter, the non-vascular stellate tissue has disappeared, and allowed the vessels of the tooth-capsule to come into close relation with the enamel-forming cells which draw so largely upon what they contain. Below this point the stellate tissue gradually re-assumes its

original proportions, and in a section of the lateral portions of the spoon-shaped incisors of the calf it may be seen to pass completely round the calcifying dental pulp from its buccal to its lingual surface. The area occupied by this stellate tissue in fig. 2 corresponds, of course, to the parts of the cavities of the capsular processes of fig. 1, which lie below the level of the enamel deposit on the denticles; the disappearance of the stellate tissue in the molar of the elephant, and the separation in that preparation of the upper part of the capsule from the depositing enamel, are alike what the Germans call *artefacta*.

Much of what has been advanced in this short paper may be found explicitly or implicitly stated in some one or other of the numerous memoirs or treatises on the development of the teeth which have appeared of late. It is believed, however, that as yet it has not been recorded that the enamel of the elephant's molar, as also that of the mastadon's, presents the very same decussating arrangement of the inner portion of its enamel which Mr. Tomes has figured ("Phil. Trans.," 1850, pl. xliv., xlv., xlvi.), as noted by him in the Rodentia, less the Leporidæ and Hystricidæ. Thus the rodent affinities of the elephant, which have so often been commented upon, receive a fresh illustration.

DISCUSSION.

The President said he would be glad to hear any remarks that gentlemen might wish to make upon Professor Rolleston's paper.

Mr. Ibbetson said that he did not know whether he had understood Dr. Rolleston rightly, but he believed that in one part of the paper he had expressed his opinion that the dentinal pulp underwent calcification before the enamel pulp. On this assumption it would be difficult to account for the hexagonal impressions which are found on the peripheral surface of coronal dentine, which are supposed to be caused by the dentinal extremities of the enamel prisms; but it could scarcely be supposed that so hard a substance as dentine could be capable of receiving such impressions. He would therefore suggest that the calcification of the periphery of the dentinal pulp, and the dentinal extremities of the prisms of the enamel, were probably synchro-

nous—a hypothesis on which the hexagonal impressions alluded to were easy of explanation.

Mr. C. Tomes thought that it would be a pity to allow Prof. Rolleston to go from amongst them without obtaining his opinion more fully on one or two most important points in tooth development, which had been touched upon in his paper.

From a comparison of the views expressed by the most recent writers, two or three different structures appeared to have been described under the name of Membrana Præformativa; while it was quite an open question whether such a membrane existed at all, its presence being only demonstrable by the use of re-agents, and being explicable on the ground of a chemical change preparatory to calcification, which takes place along a plane immediately in advance of the portion already calcified. On the whole, there was hardly sufficient evidence of the existence of a distinct membrane in any of the situations in which it had been described. Again, it appeared to him (Mr. Tomes) that the condition of the enamel organ, which had been described by Prof. Rolleston as existing at one part of the developing elephant's tooth, might have seemed to have thrown some light on the structure known as the enamel cuticle, or Nasmyth's membrane. In Stricker's Handbook, the view expressed as to its nature was, that it was not, as supposed by his father, Mr. Tomes, a continuation of the cement over the crown of the tooth, but that it was an epithelial structure, not calcified but cornified; that it was, in fact, the cornified external layer of epithelial cells of the enamel organ.

The internal epithelium of the enamel organ formed, by its calcification, the enamel, the intervening stellate tissue disappeared, and the external epithelium of the enamel organ, as it came into contact with the formed enamel, became cornified, and formed Nasmyth's membrane.

The enamel organ, as described by Prof. Rolleston, would probably afford a favorable opportunity of solving that question, viz: whether Nasmyth's membrane was or was not a product of the external epithelium of the enamel organ. For although it was hardly probable that a structure would become cornified which was afterwards to be overlaid by cementum, yet it would

be instructive to see what became of that layer of cells under those circumstances; and if they were found to totally disappear or become fused with the characteristic long enamel cells, it would render it less probable that in other mammals they should become cornified, and differentiated into a distinct structure. They would all very much value Prof. Rolleston's opinion on those disputed points, and would hear with great interest to which side he would lend the weight of his authority.

The President asked if any other gentleman would take part in the discussion upon the professor's most instructive paper; if not, he would call upon Dr. Rolleston to reply, if he felt so inclined, to the remarks of Messrs. Ibbetson and Tomes. He was sure that from the deep treasures of Professor Rolleston's knowledge he had but brought out a few hints of the keen interest pertaining to the study of comparative anatomy. He feared that, correlated as these subjects were to their own pursuits, they did not bestow upon them the attention they deserved; and he hoped that, by listening to Dr. Rolleston's most instructive discourse, many members of the society would be stimulated to the pursuit of so fascinating a science.

Professor Rolleston said that very much confusion existed both as to the situation and as to the genesis of the various membranes or films detectible in microscopic sections or producible upon free surfaces of teeth by the action of acids. Mr. Ibbetson's objection assumed that the hexagonal "depressions" on the coronal dentine were dentinal formations. This was open to question. It was, or at least might be, advanced that these "depresssions" were the optical representation of the agglutinated and flaked-off ends of the coronal apices of the enamel columns. This view he, Professor Rolleston, held. Mr. Tomes, in the quarterly journal of the Microscopical Society for 1856 (vol. iv., pl. xv., figs. 2, 6, p. 216), had figured and described the "enamel columns" as undergoing a "circumferential dilatation" just where they become continuous with the calcifying "enamel fibres." Now, an aggregate of such circumferential dilatations, if taken as formed in contact with the dentine, just as the process of calcification was beginning in the enamel organ's internal epithelium, would

give the very appearance which Mr. Tomes had some years before, in 1848, figured in his "Lectures on Dental Physiology and Surgery," fig. 18, p. 35. Kollmann's paper in the Sitzungsberichte der K. Bayer, "Akad. der Wissenschaft zu München," p. 162, Feb. 6, 1869, went to the same purpose, so far as he recollected. The "membrane," if so it could be called, thus formed, would be the first, as "Nasymth's membrane," the "*cuticula dentis*," was the last result of the process of induration, as taking place in the enamel organ. With the views spoken to by Mr. C. S. Tomes he was disposed to agree. The "*cuticula dentis*," or "Nasymth's membrane," may be supposed to be represented by the sharp line which limits the enamel off from the cement in such teeth as the incisors of the wombat, of which Mr. Tomes' father had written. "Philosophical Transactions," 1850, p. 534.

From The Dental Cosmos.

UNIVERSITY OF PENNSYLVANIA.

Clinic of J. E. Garretson, M. D. Reported by De Forest Willard, M.D., PH. D.

WOUNDS.

Here is a boy who was playing with powder this morning, when an explosion occurred, driving some of the grains, together with pieces of glass and gravel, into his lips and cheeks. The parts are blackened, bloody and dirty. Suppose he were in your office, what would you do? There is here, as in all wounds, a first indication. It is to cleanse the parts, and remove all foreign particles, as well as to check hæmorrhage, if present. How would you do this? It is a little thing, but, gentlemen, little things give the surgeon success. I take a clean sponge and a basin of tepid water, and running the liquid over the parts, remove all that is loose,—then I throw in a jet with a syringe, which brings away much more extraneous matter; next, with a pair of forceps, I pick out the gravel-stones one by one, then the pieces

of glass in the same manner, and again using the syringe, find that all is clean so far as the wound is concerned; but here are numerous grains of powder imbedded beneath the skin, which must be removed, since their presence would excite inflammation. Even should this not occur, their insolubility would render them incapable of absorption, and they would ever remain an unpleasant deformity. It will require some patience to take these all away; but, with the point of this delicate double-edged tenotome, it can be readily done. The scorching and singeing are not severe, and will be readily cured.

Having secured such thorough removal of all foreign particles, our treatment is really half concluded; for there is now no hinderance to the rapid healing of all these wounds by nature herself. We have but to apply a simple dressing of cold water, or of ext. opii ℥i, liq. plumb. subacet. dil. Oi, which will subdue the tendency to inflammation, and then keep the patient quiet; give a full dose of opium to-night, a seidlitz powder in the morning, and possibly order a little oxide of zinc ointment for the burns.

There are here no deep wounds which require sutures; and being lacerated, they require no smooth edges for approximation. Had the quantity of powder been larger, this glass might have been driven into the body with sufficient force to have severed even the facial artery and given rise to severe hæmorrhage. When bleeding occurs in wounds of this region, we must first ascertain whether the hæmorrhage be venous, capillary or arterial. Should it be either of the former, simple cold water, or possibly alum water, will be all that is required, especially if it be forcibly thrown upon the part from a syringe. Should this prove ineffectual, pressure may be resorted to, which is usually easy of application, since a bony floor is readily found. Compresses and a bandage can be obtained at all times, and your ingenuity must suggest the best mode of application. The "crossed" or "knotted circular" is often of great use. Should the blood proceed from an artery, much future trouble will be saved by a careful search for the bleeding vessel, even though it be necessary to enlarge the wound to secure it. Being once found, it can

easily be closed with a ligature or by torsion, the latter plan often answering admirably. Acupressure is sometimes useful; but over these superficial facial bones, the compress and bandage will be the most frequently useful, being applied over the facial as it passes across the border of the inferior maxilla just in front of the masseter muscle. The inosculation is so great between the arteries of the two sides that it often becomes necessary to compress both main trunks, and sometimes even the frontal branch of the ophthalmic, and possibly the infra or supra orbital. Monsel's solution — the liq. ferri subsulph. — I do not like, and think it seldom necessary. It interferes decidedly with rapid repair.

When the oozing is capillary, and refrigerants or astringents do not readily control it, much benefit may be gained by the internal administration of tinct. erigeron Canadense, one drop in water, every two or three minutes. This is one of the best remedies I have ever employed, excelling even opium and lead, although the latter are good if given in doses of a grain of the former to one and a half of the latter every hour or two, according to circumstances.

Such would be the ordinary primary treatment of a simple wound; but suppose there were some special, specific, and poisonous cause, as the bite of a dog, or snake, as frequently occurs upon the lips and cheeks, or what is even more common, the inoculation of chancre from a kiss. In the latter case you would of course treat it precisely as you would a similar sore upon the genitals; but if the wound be from either of the former causes, then immediate removal is the only safe and really effectual method to be pursued. This may be accomplished by caustic, as acid nitrate of mercury; but far preferably, if possible, by the knife; cutting well into the healthy parts. The temporary pain and inconvenience to the patient will be vastly overbalanced by the mental comfort and assurance of safety in after-years. Suction by the mouth or by cups may be useful when other means are not at hand, and is always of benefit before the application of caustic. There is no danger in applying the lips to any wound provided they are not abraded.

The next question to be considered after the cleansing of a wound, is the one called healing. In my judgment, all wounds heal by granulation, the five methods given by some authors being only a difference in degree, not in kind. "First intention," "adhesive inflammation," "second intention," "third intention," "subcrustaceous cicatrization," are but varying forms of normal cell-action. This action may be disturbed and arrested by the wound, but it soon recommences, and if vessel has been accurately adapted to vessel, union will occur so rapidly and with the production of so few granulations or so little inter-tissue, that no line of difference can be discovered even with the microscope, and we have "immediate union,"—"immediate," as Mr. Paget remarks, "at once in respect of the absence of any intermediate substance placed between the wounded surfaces, and in respect of the speed with which it is accomplished." A healing by "second intention" is but a continuation of the same process seen in the first, the only difference being that a few more granules are needed to fill up the gap, and thus we have new or cicatricial tissue—*tissue inodulaire*—in sufficient amount to be perceptible.

In illustration of these two forms, let me here show you examples. The first is a babe upon whom we operated for hairlip a month since, employing our ordinary mode of angular paring and using the common hairlip suture, adapting the parts most delicately and accurately. The result is, as you see, most gratifying; for I do not think that any of you at the distance of three feet would suspect that this lip had ever been incised. The red border is straight, the central prominence perfect, and the line of union only discoverable by close inspection.

The other patient is a boy who received a cut upon the lip while at play, which was allowed to heal without the aid of a surgeon. Look at the difference. Here is a broad, irregular, dense, white scar which will be carried with him to the grave. Such a result is always unpleasant, but especially upon this prominent portion of the body; hence we should use great care in the accurate coaptation of parts, since this is the chief means of preventing excessive granulations. "Third intention," etc.,

are but continuations of this same process, the sole difference being in the amount of inter-tissue.

This brings me to the subject of *sutures*, as it is by their use that union is best assisted. Adhesive plaster or compresses may answer admirably where a wound is only slight, but deep or extensive incisions need a support which is immovable. The least possible scar will be obtained probably by the use of stitches or pins, augmented by adhesive strips, or by small compresses at the side of the wound, supported by a circular bandage. The best material for sutures is silver-wire, although iron is nearly as good, and even silk or hempen thread will not often prove irritating; still, all vegetable material is less cleanly and tends to ulceration. Horse-hair is sometimes used. Metallic sutures may be retained in the body for a considerable period, and since the time of their introduction, by Simpson, they have been steadily growing in favor. That they were used long before his time is evident, however, from the fact that Fabricus ab Acquapendente recommends their use, and speaks of the irritating character of vegetable material. He used a continuous piece of metal for both needle and thread,—one end of the wire being sharpened for passage through the tissues. The twisted or figure-of-8 suture which you see me so often use, is of great service in wounds of the face. In the passage of the pins, great care should be taken to keep the margins of the wound exactly on the same level, while doubling in of the skin may be prevented by tilting up the edges of the wound during transfixion. The thread used for this suture should not be hard, since such material bruises the delicate parts beneath and leaves a scar. Narrow strips of lint would be even better.

The quilled and continuous suture are seldom used. Serrefines, those little serrated, spring-wire forceps, are sometimes employed to approximate wounds of the mucous membrane.

In regard to the time for removing sutures, no definite rule can be laid down. You must judge from the condition of the wound after cleansing. If it shows evidence of the incision, do not disturb them; but if there is simply a fleshy line, then you may carefully venture, even if it be not more than the second

or third day,—usually longer, however. Use care in the removal of any suture, and do not rudely tear the tender granulations, but always give support with your fingers. Always give either the pin or the wire a rotary movement as it is withdrawn by the forceps. A pin should be cleansed smooth from blood-rust before removal. The silk used will often adhere to the surface, from drying of the blood, and it is most commonly advisable to permit it to remain several days.

Adhesive strips should be removed slowly and from both sides of the wound simultaneously. The covering of a well adapted wound is not essential; still, a piece of lint saturated in carbolized oil, one part to the hundred is often advisable.

At the second dressing give good support to the parts by strips, but do not clease the wound too scrupulously; it should be touched, if at all, as gently as an embryo,—for such it is. In granulating wounds a sponge should never be applied. Running water is better; and the dressing, whether of oil or cerate, should be light. Stimulating dressings are only necessary when the surface granules are sluggish.

In conclusion, gentlemen, I have to show you this man, who states that he has a small pistol-ball imbedded in the side of his lower jaw, it having been in that position for two days. I cannot detect it through the wound, but I find that my probe is very nearly at the root of the first molar tooth, and as I cut down through the gum, I can easily feel a small, hard body, which I now lift away, and which you see is that which we seek. A foreign body should always be removed unless it is quite certain that the operation for removal will be of more injury than is likely to result at any time from the retention. These bodies do sometimes become encysted, but more frequently give rise to much inconvenience, and especially if sharp may be moved by the pressure of surrounding parts until they occasion serious mischief. There is an interesting paper published in the Proceedings of the Med. Chir. Soc. vol. i. p. 71, by Dr. Bence Jones, in relation to magnetic indications of the presence of iron bodies in the human tissues.

This wound before us shows decided signs of commencing ery-

sipelas, but I think will not progress further, now that the offending cause has been removed. For safety, however, we will brush the parts once or twice with a mixture, which I have always found to exert a most decided and happy influence over this dangerous disease, so common in connection with surgical injuries:

℞. Tinct. ferri chlor. f℥ss; Quiniæ sulph. ℥ss; Tinct. cinchon. f℥ij. Sig. To be applied with brush.

[Patient directed to return for daily inspection.—De F. W.]

TRANSACTIONS OF ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, APRIL, 1871.

The President having invited casual communications—

Mr. Coleman said he had been requested to bring under the notice of the Society a very ingenious apparatus contrived by Mr. Stevens, the dental house surgeon at the hospital. The object of this contrivance, as all must clearly see, was to provide a means of illuminating the mouth of the patient on those dark days which so frequently occur in London, and which they had especially witnessed during the past winter season. The main object Mr. Stevens had in view was to spare the patient, on such an occasion, from an extreme glare of light. (Mr. Coleman then made one or two remarks explanatory of the action of the illuminator, which to the audience, with the instrument before them, were perfectly clear, but which, if transcribed, would be unintelligible.) Mr. Stevens had taken very great pains in bringing this apparatus to perfection, and though he (Mr. C.) was not an advocate for prolonging the hours of work, yet he could confidently say that the instrument was as perfect as any such apparatus could be; for it threw a good light on the object to be illuminated, without distressing the patient or dazzling the operator. Mr. Coleman then placed a gentleman in a chair and showed the use of the illuminator.

The President thought this illuminator would prove decidedly valuable. An eminent brother practitioner, seeing that he (the

President) had an adjustable gas-light, remarked on it as implying that he was ready at any unseasonable hour to see a patient —saying that he had nothing of the kind himself, and made no provision for working after day-light had passed away. There was a great deal of practical wisdom in the remark, but he must say, knowing the difference between the winter day-light in London and in the country, and the gloomy atmosphere surrounding them, there was, unfortunately, many a day when they wanted to attend to their practice and found that they could not. Then the use of artificial light became imperative, and he thought the present was the most convenient arrangement of light for the purpose intended, that had been brought under their notice, and they were greatly indebted to Mr. Stevens for having so ingeniously worked it out.

Mr. Lawrence Vanderpant said that, with their usual courtesy, Messrs. Ash & Sons had complied with his suggestion, and had sent for exhibition the two instruments now before the President, —"Kirby's Automaton Mallet Pluggers." He had had an instrument similar to the simpler of the two, in use for nearly two years, and had no hesitation in recommending it as a very valuable implement. With it a very solid plug could be effected with only half the labor necessary by manual pressure. It had the advantage over the ordinary mallet that an operator could dispense with the services of an assistant. He had submitted several patients respectively to the application of the instruments known as Foote's, Snow & Lewis's, and that which was before the meeting. In every case the latter instrument was preferred, as being productive of much less disagreeable sensations to the patient than the others; besides which it did not tend to fatigue, and, as it were, numb the fingers of the operator, as he had found to be the case with other instruments. Its action might be compared to that of "riveting," and the *speed* with which it accomplished its work was surprising. Any fault that might be found with the instrument would at first arise from *want* of experience in its use, but he was satisfied a thorough acquaintance with it would secure it a good reputation. He thought great improvements were necessary in the "bits"—that he believed

was the technical term. He had been obliged to have them constructed in his own laboratory. The instrument had heen exhibited about two years since in a modified form by its inventor, Mr. Kirby, of Bedford.

Mr. Harding thought the necessity for the mallet had been done away with by the introduction of the rubber dam, for when it was used, the two hands were free to use the ordinary mallet. He would ask Mr. Sercombe whether he had used the rubber dam when filling with osteo-plastic. Members had, no doubt, found that these fillings gave way at the necks of the teeth, in consequence of the mucus collected at that point. This was entirely obviated now by the rubber dam — the stopping, when it was used, remaining as hard as the specimen attached to the manufacturer's card-box. Drs. Moffat and Hawes, from Harvard University, were at the Dental Hospital six months ago, and showed the application of the rubber dam. It had been used at the hospital before that, but they explained it very clearly and carefully, and since that time it had been used almost invariably on his day (Friday), and he supposed also on the other days. The difficulties of its application were easily overcome by any one who would take the trouble to go into the matter.

Mr. Lawrence Vanderpant said he thought Mr. Harding misapprehended the use of the instrument he had introduced to the notice of the society. He would ask him what amount of hand-pressure would be requisite to rivet a head on a piece of wire? He would maintain that it was practically impossible to rivet with such pressure, and yet with the lightest possible hammer it was the work of the greatest ease. He compared the action of this instrument to that of the riveting hammer.

The Secretary then read the following communication from Mr. Balkwill:

"To the Secretary of the Odontological Society.

"13 Princess Square, Plymouth, *March* 29, 1871.

"Dear Sir — I enclose models and drawings of a method for pivoting front teeth, which I think is new, for the meeting of

the Odontological Society, next Monday evening. If it is a new method, I wish to present the models to the museum; if not, will you kindly return them to me?

"The stump is prepared in the following manner: A hole is drilled up the centre as deep as can safely be done, and a screw thread is then tapped in this hole. This is done by using two drills to be presently described. A chamber is now made on the face of the stump, with flat-headed burr-drills, rather less than the eighth of an inch in depth, and as large as possible without endangering the strength of the walls of the cavity. After carefully washing out all the *débris* and drying the hole, screw up a gold tube which has a screw cut on its outside, and which is long enough to line the whole length of the hole bored, and stands up in the centre of the cavity made by the burr-drill, so as to be level with the top of the stump. There will thus be formed a circular ditch between the gold tube and the sides of the stump, which is to be filled with gold-foil as in an ordinary stopping. Before screwing up the gold tube, in order to make the joint perfectly water-tight, smear it with a very little white lead and oil. A mineral tooth is now to be fitted in the ordinary way, and mounted on a split pin. It will require no other fastening, and can be removed at pleasure.

"This plan has occurred to me from the annoyance I have experienced from time to time by alveolar abscess supervening the pivoting of a tooth; or from the tooth becoming loose in consequence of the progress of decay. I think this method will meet both these difficulties. If abscess threatens, the artificial tooth can be readily removed and remedies applied; the hole that receives the pin of the tooth will not gradually enlarge by decay; and the stump being protected from the action of moisture by the tube and stopping, is rendered much more durable.

"The gold tube is made by winding a thin ribbon of plate spirally round the same sized wire as it is intended to use for mounting the mineral tooth upon. The seam is then soldered up, and a screw is cut on the outside of the tube. The square end of a steel drill should be driven into one end of the tube

with a light tap of a hammer; this will make four slight indentations in the inside, which will give sufficient hold for the operator with the same drill to screw it into its place.

"The two drills which are used to bore the hole have first a screw cut on them with the same hole on the screw plate as that through which the gold tube is passed. The one to be used first is then filed until the screw marks are scarcely visible. Both are then hardened and sharpened, and are ready for use.

"I remain, yours truly,

"F. H. BALKWILL."

Mr. Fox presented to the museum of the Society, on behalf of Mr. Bellaby, of Nottingham, a specimen of an upper first molar, with an exceedingly curious union of the fangs.

Mr. Fox also handed in a communication from Mr. Fletcher of Warrington, explanatory of his new filling, which Mr. Fletcher feared, from the report of the Society's Transactions, had not been clearly understood.

The letter was as follows:

"The filling is a mixture of two parts of silica ground to an impalpable powder, and one of gum copal. It requires to be broken into pieces which are small enough to go into the cavity, and afterwards to be condensed with a hot smooth instrument, which is kept slightly moistened with oil to prevent adhesion. It can be built up to any form, and afterwards filed to shape, the edges carefully condensed with a warm instrument, and the surface polished. The easiest way to keep the instrument slightly oily is to have at hand a gun-wad, or small piece of felt soaked in oil, on which it can be occasionally rubbed. It is in some cases better to soften the pieces of filling over a flame before inserting them in the cavity; but they must be inserted and condensed very quickly, as they become hard as stone in two or three seconds, if not kept hot. This sudden hardening is one difficulty which it requires practice to overcome. I have used the filling for about three months in all positions, and the only case in which I have seen the slightest change in it, is in the first filling I made with it, which was not properly condensed.

It is not intended to replace gold, and I did not wish any one to suppose so; but it is, so far as I have seen, a good cement, and more trustworthy than any other we have, approaching the color of the teeth. The copal wears slowly off the surface of the compound, leaving a surface of silica as smooth as glass, which appears unchangeable. I shall be glad to send a small quantity to any one who will try it carefully and report on it. If more is wanted, the process of making has been published, and no doubt the depots will take the matter up."

HASTY DENTAL OPERATIONS.

In this article we propose to consider only the effects of hasty action in filling teeth, and only one phase of this operation, namely, the packing of gold plugs, or rather the formation of the plug, by packing the gold into the cavity. We have been led to a consideration of this subject by observations upon faulty fillings, which a careful examination has satisfied me owe their imperfections to hasty packing. In very many locations the packing of gold in the cavity is a work which requires great care, and in those cavities which are unfavorably situated, very many of the failures can safely be attributed to that cause. For instance, upon a proximal cavity in a right bicuspid, if the operator be right-handed, there is great danger of making an imperfect filling along the labial margin of the cavity, likewise in filling all under-cuts wherever located. The operator is apt to use too large pellets or pieces of gold in these cases, and is also apt to use too large points for packing. To come down to something definite, pieces of No. 20 gold foil, one-fourth of an inch square, carefully packed with a square point, which will measure No. 28 by Stubb's gauge plate, are about the proper size for all such locations. The surface of all plugs require also the same care, if we expect to get a filling that will dress up in a creditable manner. We are aware that many object to the spending of so much time upon fillings as this necessitates, but we are

fully of the opinion that no other method will produce as good fillings under all circumstances as the one indicated here. Cylinder fillings may be put in, in some favorable locations, that will be serviceable and that will present a very beautiful appearance, but the places where this can be done are comparatively rare, and moreover requires as much skill in manipulating as to fill with adhesive gold. Advantage may be taken of this fact, however, in a good many cases and time be saved by it, but in a great majority of cases, adhesive gold is by far the safest, if it be in the hands of a careful and skillful manipulator. A filling that has been thoroughly packed may be burred down if a crown central cavity, and no other polishing is necessary; or if it be a proximal filling of an upper incisor, it may be dressed with a file, followed by sand paper, No. 00, and then by pumice and rouge upon a strip of chamois skin. In crown cavities of molars and bicuspids, the finish left by a fine burr is not improved by stoning or any other kind of polishing. If too large pieces of gold have been used in filling, or if it has not been sufficiently consolidated, no amount of labor in the way of polishing will leave a perfectly smooth surface to the plug, and I am satisfied that a great majority of pitted plugs, and those that leak at the margins, result from this cause. J.

Mechanical and Miscellaneous Department.

A FEW DAYS AMONG THE EUROPEAN DENTISTS.

In compliance with your request, I will try to give you, in as condensed a form as possible, the impressions received from a short time spent, this summer, among some of the more prominent English dentists, and a day and a half at the German society, supplemented by calls on some of the Swiss and American dentists at their own places.

It is but just to say that the reception accorded to me, an utter stranger, and without any sort of claim upon the hospitality

of the profession, was generous in the extreme; and, so far from being made to feel like an intruder, the reception in almost every case was more than polite—it was friendly.

If, after this, anything should meet with condemnation, let it not be attributed to any personal feeling.

In Liverpool, as every traveler knows, there is little to attract the casual visitor; so, after five or six hours with Dr. Waite, who located there after graduating in America, and worthily represents the American mode of practice in that city, I went directly to London.

Here I met Messrs. Mummery, the president of the Odontological; Sercombe, the secretary; Fox, the editor of the *British Journal;* Tomes, father and son, the one so well known to us by his writings, the other aiding in the cause of dental education by lecturing at the Soho Square Dental Hospital as well as by contributions to current dental literature; Saunders, the dentist to the Queen; Ballard, the longest established American dentist in London; Barrett, whose business compels the employment of from seven to nine assistants of various grades; and a number of others, not so well known on this side the Atlantic.

I was allowed by several of these gentlemen to stand by and see their operations of various sorts, and was shown by nearly all of them through their establishments, that I might see how the work was done there; and only one seemed absolutely unwilling to speak of professional matters or to exchange views on professional principles.

It may be going very near the verge of indelicacy to mention names and facts in this way, but my excuse must be that what is written is for a limited class of readers, to whom the gentlemen named stand in the position of public characters, because of their prominence in the profession; and without this degree of personality the communication would have no "*raison d'être.*"

At Mr. Sercombe's I was fortunate enough to witness a case of torsion, about which we have heard so much and seen so little that was favorable. In this case the patient,' a little boy of twelve years or thereabouts, was anæsthetized by nitrous oxide, and one of the central incisors, which was about three-fourths

erupted, in a position nearly at right angles with what it should have been, was operated on. This incisor was seized with a pair of flat-nosed pliers, armed with buckskin so as to prevent injury to the tooth, pressed strongly UP, and, while so pressed up, gradually rotated back and forth until the tooth was felt to yield in the socket, when it was slowly turned to a little beyond the position which it was intended to occupy, and a retaining plate was placed in the mouth.

This retaining plate had been previously prepared by cutting the plaster tooth from a cast of the mouth, placing it in the desired position, and on that, vulcanizing the plate. This completed the operation; and I could not help a contrast most unfavorable to ourselves, as I recollected the long and tedious processes resorted to among us for the accomplishment of the same end, and the frequent ill success attending even them.

Remarking upon what might be hoped for in the future of this case, Mr. Sercombe kindly gave me an opportunity to see two other cases, one of which had been done about two years previously, and I was obliged to confess the success was most pleasing in every respect—pulps living, teeth in position, one of them affected by a slight recession of the gum, not noticeable except to the professional eye, but further than that no trace of what had been a marked deformity.

On a subsequent occasion, speaking with Mr. Tomes about the operation, he said that he knew of no cases in which the patients were young, where the pulps had been destroyed, or other perceptible injury had supervened, although they had treated quite a large number at the dental hospital within a few years past, and he thought if proper care were used there was no physiological reason against the operation.

Speaking of Mr. Tomes, let me say that, high as is his reputation among his profession, based mainly upon his writings, it is none too high, if so slight an acquaintance enables one to judge at all correctly.

He is most careful and accurate, not only in what he says, but in what he does; scrupulously nice in his manipulations, even about unimportant things, and seemingly devoid of all petty

and personal ambition; more desirous of *doing* well what he does than of having others think he has done well, and seeking to know what is true instead of seeking to establish some theory. Although well known and kindly regarded by all his profession, he mingles with them very little, finding need for all his strength in the demands of daily practice, his health requiring regular hours and habits of life to maintain it.

I find that dentists in England, who are graduates of the College of Surgeons, are regarded and treated with consideration and respect from all classes—the tribute paid everywhere to solid acquirements—while those who have come into practice (I will not say to the profession) by some by-way are allowed to gravitate to their "own place." Sometimes, of course, a man by sheer force of character will surmount early deficiencies and make for himself a position; but, rare as such a case is in America, I should think it would be still more rare in England, where the gradations in society are so well marked and strenuously maintained.

Good general culture and special scientific knowledge are far more frequently met with among the English dentists than among us, and the grammatical blunders which are tolerated among us would there consign a man to obscurity. I speak, of course, of the practitioners in the large cities, of whom alone I know anything at all. On the other hand, we are far more in the habit of applying our knowledge than they, so that, although they may as a whole far surpass us in the aggregate of their knowledge, may be better members of society in the larger sense of the term, more agreeable and polished gentlemen, we at least seem to render the best service to suffering humanity in our department.

There is a certain adaptation of means to ends, that is general among us, that does not seem to be even desired among them. The "traditions of the elders" are more sacredly cherished among them than among us, and if the books say "bleed, and cause to drink hot water," they seem to do it faithfully, though never a recovery blesses their sight.

Now, not wishing to seem unfair in these condemnatory

remarks, I will give you the reason, as it seems to me, for this backwardness on the part of men who, on the whole, are better qualified mentally than we are for really scientific practice.

They have a most vicious system of compensation, which invites dishonesty at every step. It is the fixed fee system to which I allude. Surgeons, graduates of the schools of medicine, and dentists occupying the same rank, almost universally demand a guinea for a visit in the large cities; in the small towns it is equally a fixed sum—perhaps half a guinea—which, by the way, seems to me extremely small business, as the guinea has long since gone out of circulation, and a guinea fee is like our charging five dollars and a quarter, while the half-guinea is like charging two dollars sixty-three cents—all the time bearing in mind that we have a $5 gold piece and a $2.50 gold piece, which are common currency. The fun of this thing is enhanced by the strenuousness, quite natural, of the surgeon in insisting upon his extra shilling, and the efforts at evasion of its payment often practiced by the patient.

This fee, being a well understood thing, is as cheerfully paid for an extraction, or the thrust of a lance, or in many instances for a prescription or a statement that "all is doing well,"—things which occupy only five or ten minutes,—as it is for a careful operation, taking an hour or more in its performance. So, instead of standing up against so manifest an injustice, the whole profession, with few exceptions, yield to it, and do for each patient only what they feel they can well afford to do for the money.

The result is what might be expected; the generality of operations are bad, the material used in fillings too often amalgam, the utility of the dental art questionable, the treatment of disease empirical and hasty—the extracted teeth telling no tales—and filthy mouths and teeth, breeding fresh disorders, which mean more guinea fees, while ambition to do well is thus repressed; and, indeed, in pure self-defence, a man who practices his profession to gain a living is forced to see as many patients as he possibly can in the hours devoted to business, each patient as a rule being the equivalent of a fee.

Hence, a large proportion of the incomes of even the dental surgeons, of highest rank, is derived from the manufacture of artificial dentures, which also are the subject of some competition; price comes in again, and *artistic* replacement of lost parts is as rare as restoration fillings. I, for one, no longer wonder at the indifference of English operations upon the teeth. I rather wonder at the occasional excellencies one sees in operations, and at the sterling honesty of those men who, as a class, are more true to their patients than their patients are to them, in that they frequently give an hour to perform an operation for which they would receive the same fee were only half an hour or less employed; but, in justice to the patient, they take the longer time.

This system tells badly on the dental school, for the main desire seems to be to acquire as many high-sounding titles as possible, so as to have as many patients running after one as possible, each with his guinea.

I stood by while the gentleman in charge of the Soho Square Dental Hospital, called the house-surgeon, finished up two gold fillings for different patients, and pronounced them completed operations. Should the boy in my laboratory venture to put such fillings into an extracted tooth, by way of practice, I would inform him that they must at once be done over and done better, or he could seek some other employment. Yet this same gentleman is the possessor of an American diploma, as I am informed, and told me that next year he expected to have seventeen letters to his name, and then he should—never mind what. In pleasing contrast to this was a young man who had been a student at that place but six months, who, with the rubber dam in place, was at work on a tin filling, which he finished with all the care and nicety that such operations call for; and on a subsequent day I saw him at work on a gold filling, which he was treating with equal care, and which promised to be a fine success. The "surgeon in charge" before alluded to remarked, in answer to my observation on the skill of the young man, "Oh, any body can pack gold; I used to do it, but it don't pay."

This same young man, the student, has invented a gag that is neat, cleanly, out of the way, not painful, and that will not drop out if the mouth should open a little wider, that promises to be very useful in extracting with anæsthetics, and sometimes in filling teeth. "Hutchinson's Gag;" you may hear of it again some time.

I make rather an abrupt turn from the subject, for my departure from London was very abrupt. I left England, and, passing by way of Belgium, went to Berlin to attend the Assemblage of German Dentists.

At Liege lives a quiet little gentleman named A. Rosenthal, who is a marvel. He takes and reads all the dental journals he can get hold of—French, German, and English (not the MISSOURI JOURNAL, though); and his practice is, so far as I could judge from conversation alone, based upon the same principles that the practice in the best American offices is.

His description of his mode of dealing with all manner of cases, suppositionary, of course, tallied with our modes; and, to cap the climax, he told me that he would not hurry any operation, as he operated wholly by time, so that he frequently spent from two to four hours over a single tooth, and could seldom average over four or five patients in a day. This, where from twenty to forty patients in a day are sought after, and the fixed fee system prevails also, is a specimen of what can be done towards stemming the tide of public opinion when one is sure of the right.

What I saw in Berlin I have imperfectly told in the *Cosmos*, so will not repeat here; but will conclude with a few comments upon American dentists abroad. I have now seen the greater number of those who have any reputation at all, and am bound to say this for them: they are very gentlemanly fellows, and give good dinners; but, judging each one from what the others generally say about him, most of them are rascally cheats not worthy of the confidence of any one; and "Tom Evans" (if the others generally are to be credited) is the one deserving of the least success.

Now, I speak for myself in saying that, after personal ac-

quaintance with nearly all of them, I find much to admire, much to respect, and much to like in nearly all of them. As a class, they are better society men than the same number taken at large from the present home crop; and as for Dr. Evans, I have seldom met a gentleman with more polished manners than he. Each, no doubt, has his faults; but it is grievous to have those first brought up when a name is mentioned in the presence of another of the same profession.

One or two stood nobly by their professional brethren, said what they could in their favor, send them patients even, when they can, and leave harsh judgments altogether aside. I should like to speak of these *true* Americans, but that would be invidious; so it shall all be left to imagination. Yet I honor them in my heart, and should I ever be able to do by them as they have done by others it would be a real pleasure so to do.

So-called American dentists are quite plentiful, as all those who have taken American diplomas—even the cheap ones—call themselves "American."

The Morrison chair is getting to be much used. Ash has the management, and is pushing it largely; and its own intrinsic merits help it along.

Ash has his dental depots in Vienna, Berlin, and Hamburgh, with headquarters at London. So all sorts of conveniencies can be had quite easily, and there is also quite a large stock here and there of American goods for dental use.

S. S. White has an agent in Europe occasionally. I met him once, and heard of him many times. It seems that nice manipulations are the peculiarities of American dentists abroad, and far greater success in saving teeth than their European *confrères;* and this opinion of them has received fresh confirmation from nearly all who have gone over there to practice, after being well instructed here; but they have none of the advantages of associated effort that we enjoy in the land of our birth—more's the pity for them!

E. A. Bogue, M. D.,

No. 29 East Twentieth street, N. Y.

TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Mr. C. J. Fox exhibited to the Society a lathe, contrived, so far as there was anything original in it, by Mr. Williams, of Warwick, and Mr. Appleby, two former students of the Hospital, for use in the operating-room: the action was rather short, but use would overcome that difficulty. There was also an ingenious little arrangement of the sponge for wetting the wheel. On the frame of the lathe before them was a label bearing the inscription, "Presented to the Dental Hospital by a former Student."

Mr. Coleman had a few casual communications to bring under the notice of the Society, and, as they all were connected with the same subject, he thought he should economize the time of the Society by stating them *seriatim*:—The first it was his pleasure to call their attention to, was an ingenious gag for keeping the jaws apart whilst employing nitrous oxide, devised by Mr. Hutchinson, a pupil at the Dental Hospital. It consisted of a horse-shoe form of spring, to the extremities of which were attached pieces of metal guarded with gutta-percha, which, when the instrument was used, were adapted to the incisors of the upper and lower jaw; these latter were attached to the former by swivels, so that the spring portion of the instrument could be moved to either side of the mouth, and quite out of the way of the operator: a stop regulated the distance; the mouth, when acting upon the spring, could be closed to. It had the great merit of simplicity, and appeared to him to fulfill everything the designer of the instrument intended. The next matter he would call their attention to was a neat and portable nitrous oxide apparatus, devised by Messrs. Barth & Co. A small mahogany case containing an oval-shaped copper gas-bottle, holding twenty gallons of the gas compressed; a thin rubber bag communicating with the same, tubing, taps, and face-pieces; the whole being very simple, light, and compact. He would now show them a very simple contrivance for always enabling them to have the

pads of their face-pieces tense. Both air and water, they were aware, found their way, after a time, through india-rubber. To the pad, then, he had connected a small india-rubber tube, through which, at any time, air or water could be introduced, and which was made secure with a wooden plug. Lastly, he would call their attention to the advantage he had found of administering nitrous oxide through the nose, the mouth being covered during the inhalation. Mr. Clover adopted the plan of rendering the patient unconscious with the face-piece, and then rapidly substituting a nose-piece, which certainly prolonged the time of anæsthesia. He thought, however, that if patients were rendered unconscious by breathing through the nose only, there would be more chance of their continuing to do so when the mouth was opened afterwards, than if they had been breathing previously through the nose and mouth, or mouth only. The best results he had yet seen had in several cases attended this plan of inhalation. Mr. Coleman then exhibited the instrument he had employed for administering nitrous oxide through the nose.

The President said that Mr. Coleman's excellent suggestion was an illustration of the not infrequent occurrence, that two observers, engaged in the study of a subject, had independently arrived at a similar discovery. For some little time past, in connection with his own practice, he had experienced increased facility in operating, by means of Mr. Clover's method of prolonging the effect of nitrous oxide gas. When the oro-nasal face-piece was duly placed, Mr. Clover requested the patient to try to "snore," and it was found that this mode of breathing was so steadily maintained, that on the substitution of the simple nasal inhaler, the patient still breathed exclusively through the nostrils, the anæsthetic condition being thus conveniently prolonged. The only inconvenience arose from obstructing the view of the last molar; but he believed that some modification in the attachment of the tube would obviate this difficulty. The President regarded the gag devised by Mr. Hutchinson as a most valuable invention, and one for which all would be thankful, in cases where operations were needed on both sides of the mouth.

Mr. Bell Longhurst presented to the Society a portion of the lower jaw of a lamb, containing a dentigerous cyst. He said that the body of the jaw, immediately behind the temporary incisors, was distended into a large cyst of the size of a walnut, in the centre of which, embedded in ropy matter, a permanent incisor was found.

The President asked if it was as it then appeared.

Mr. Longhurst said the tooth was slanting forwards, and its undeveloped fang was attached to a membrane which lined the cyst.

The President inquired if the sac was full of pus.

Mr. Longhurst replied that it was, and pointed externally. When the disease was discovered, the animal was slaughtered and that portion of the jaw saved and prepared by the gentleman who sent it to him; it was boiled, and the temporary incisors were lost. A few weeks ago, through the courtesy of Professor Pritchard, of the Royal Veterinary College, he had been permitted to examine the collection in the museum, and he could not find a specimen of dentigerous cyst in the sheep; and was informed by Professor Pritchard that the disease was exceedingly rare in the sheep, and that this was the first instance of a disease of a similar nature that he had witnessed in the *lamb*.

The President then inquired if he had not found proof of the disease in the sheep?

Mr. Longhurst said, no; but he had found there were two excellent specimens of the disease in the sheep, in the museum of their own society, and must congratulate the society upon being so fortunate as to possess them.

The President was of opinion that the injury was the result of mechanical violence. He had in his own cabinet a very similar specimen of a sheep's lower jaw, in which the cavity was filled with pus, and three teeth were hanging by the integuments, the socket walls having been entirely absorbed. In both cases the mischief probably arose from the blow of a stick or stone. He would have much pleasure in contributing the specimen to the museum.

Mr. Coleman said that there was in the museum of St. Bartholomew's Hospital a specimen, also occurring in sheep, very similar to that brought before the society.

FOLSOM'S IMPROVED PATENT ATMOSPHERIC DENTAL PLATES.

In reply to our correspondents, to whom our name has been given as reference, and who desire to learn what we know about Dr. Folsom's improvement, we publish the following as the sum total of our personal knowledge in the matter:

On the 1st day of January, 1867, letters patent were granted to N. T. Folsom, for certain improvements in atmospheric dental plates. These improvements consist in what Dr. F. terms packing ridges, either hard or soft, extending round the border of the plate.

Dr. Straight also received a patent, November, 1869, for the attachment of a soft elastic edge on the rear of a rubber plate.

A patent was also granted Dr. Hurd, September, 1866, for the mode of constructing a flange, either hard or soft, around the edge, or border of a rubber plate.

Patent was also granted Dr. Twitchell, for a soft rubber cushion, or flexible lining for dental plates.

The end sought to be attained by these various improvements being the same, viz., to secure a plate firmly in the mouth, so that it will not drop while eating or speaking; we mention them, in this connection, none of these so-called improvements seem to have met with much favor with the profession so far as we have been able to learn. Dr. Folsom's is undoubtedly of the most practical value, and hence has been more generally adopted. The hard ridge on rubber plates, described by Dr. Folsom some three years since, and published in the first number of this JOURNAL, has been used by the profession here, for five or six years past, and by many thought to be of much practical value.

The soft ridge was brought before the dentists of our city in

March last, by Dr. Folsom himself. He put his soft ridge on a set of plates in our office. The patient, an old gentleman for whom several unsuccessful attempts had been made to supply with artificial teeth, with which he could eat. For the first few days after the soft edge was put on the plates, the patient seemed to get along quite well, but in less than two weeks we met him, and learned to our surprise and regret that he could not do any better, if as well, with his teeth as he could before the improvement was made on them. He gave them up and has not worn them since. In justice to Dr. F., we should here state what we believe to be true, that the failure in this patient's case was due to causes over which soft ridges, flanges, soft edges, or any thing short of a rivet through the palate, could not prevail.

We have never applied Dr. F's improvement; have never seen it applied; have heard of but two cases, since his visit here, where it has been used, and in both of these cases it was a failure; it may have been the fault of the operator. We have no doubt, if properly applied to a plate in extreme cases, it may serve a good purpose, by aiding the retention of the plates in position till the patient has become accustomed to them, and learned the art of using them. We do not think it can serve more than a temporary purpose. From personal observation we find that soft rubber soon deteriorates when worn in the mouth.

The following directions for constructing a plate with the hard ridge are taken from Dr. Folsom's circular: E.

To prepare a model for an upper set, with my improvement, take an impression in wax; trim off the surplus; press out the wax that comes against the labial surface of the dental ridge, to give room for plaster; then cool the wax; you now have a cup suited to the case, in which take the impression in plaster, mixed with a solution of sulphate of potassa (Dr. Chamberlin's rule is one-half an ounce to a quart of water—sometimes more and sometimes less, according to the plaster); varnish with ethereal varnish. Mix the plaster for the model with the same solution; dip the impression in water, and immediately pour the plaster. The next step is to examine the mouth, to ascertain where the edge of the plate will extend, then mark the line on the model;

examine the mouth again, to ascertain the yielding nature of the parts of this same line, and note the hard and soft places; then, with a suitable instrument, cut a groove in the plaster model, along the entire line of the edge of the plate, one-twentieth of an inch wide, varying in depth from one-sixteenth to one-sixtieth of an inch. As a general rule, I commence cutting the groove in the rear of the tuberosity on the right side of the mouth; at this point deep, then shallow till I reach the soft part at the side of the back of the mouth, which I cut deeper than any other point, then shallow till I reach the corresponding point on the opposite side; from the rear of the tuberosities to the canine teeth, comparatively shallow; around in front, from canine to canine, quite deep. I endeavor to cut a well-defined groove.

A plate made on this cast, if not injured in vulcanizing or otherwise, will fit not only the mouth, so that atmospheric pressure is obtained, but has a packing ridge encircling it which prevents ingress of air under it, and thereby secures the pressure on the outside. I make the ridge as high, all round the plate, as possible, and not pinch the flesh.

To make a plate with the soft or elastic Packing Ridge; the model is prepared as for the hard ridge. Cut the pattern plate short, so that it will not reach the groove by at the least one-eighth of an inch. Wax up the job, taking care not to extend the wax beyond the pattern. Take a strip of soft rubber, wide enough to just cover the groove and reach the waxing, lay it along the edge of the pattern plate in its place, and join it to the waxing with melted wax. Now mix some plaster, and cover the soft rubber, and let the plaster extend down the sides of the cast or model. It is now ready to flask. After opening the flasks, wash out with boiling water all the wax from the soft rubber; take a strip of soft rubber, and pack on the soft rubber that is confined in the plaster; then take a strip of vulcanite, wide enough to cover the soft rubber, and pack it on the soft all around. Now pack and vulcanize as usual.

In finishing a plate with either hard or soft ridges, be careful and not mar the packing. Trim the soft rubber with sharp scissors.

In fitting a plate in the mouth with the hard packing, reduce the ridge where it is too high, by scraping with a sharp knife cautiously. It is generally well to reduce the plate inside of the ridge with a hoe-shaped instrument, at the time the ridge is reduced.

The same directions apply to the under plates, excepting the ridge is not more than half as high.

THE MISSOURI DENTAL JOURNAL.

With this number commences the fourth volume of the MISSOURI DENTAL JOURNAL. The three years of its existence have been marked by a more than usual activity in the profession, and we verily believe that greater progress has been made towards the attainment of a position such as is required to entitle it to a place among the learned professions than any other three years in its history. Whether the MISSOURI JOURNAL has done its part or not in bringing about this desideratum, must be answered by our patrons.

Although it is gratifying to be able to report progress in this direction, still we must not conceal the fact that the great body of practitioners in this as well as in foreign countries, are still far from being as advanced in literary and scientific acquirements, as well as in culture, as the members of an honorable profession should be. It must be also conceded that a vast amount of labor and energy are expended to no purpose for want of system. No amount of general reading will make a man intelligent unless his efforts are systematized. We have no doubt but that the long-winded essays that periodically make their appearance at our dental meetings, are, upon an average, a source of greater advantage to the authors than to the auditors. The study of authorities and the general investigation resorted to, to furnish material for a paper, together with a thoughtful consideration of the whole subject, seldom fail in giving the author a much clearer understanding of the subject than he had before he began the preparation of his treatise. The auditors,

on the other hand, too frequently give it but a moment's attention, and then it is entirely forgotten. There are many members of the profession who are capable of writing good articles upon many subjects connected with dentistry, who rarely take up the pen for such a purpose, whilst there are many others totally unfitted by education and experience, who are especially anxious to take upon themselves the task of teaching others what they know little or nothing about themselves.

There are very few, however, who have a common school education, that cannot do something, even through our current literature, to interest the profession, and that will inure to the general good.

Reports of cases, when plainly and correctly made, are generally useful and usually readily find place in the dental journals, and are acceptable to the readers.

But careful experimental investigations, involving, it is true, some labor, are the most eagerly sought after. They must, however, have been made with great care, and detailed at length, so that they may be verified by others, or their accuracy will be distrusted.

This is what we want in the dental profession to-day. It requires time and thought, and a clear appreciation of what is necessary, to fully prove by experimentation, and the requisite labor will accomplish the rest. It is a field in which any one is capable of working. It only requires a sufficient amount of manhood and perseverence, and a desire to do something for the good of the profession.

If any one of our readers has such a desire, and is at a loss as to the subject upon which he shall expend his energies, if he will communicate with us we shall take great pleasure in making suggestions for his consideration, provided that he has confidence that his manhood and perseverence will suffice to carry on the work. We hope to hear that there are some in our ranks who will consider and act upon this suggestion, and if a sufficient number will do so our dental literature will doubtless be improved. We intend, as heretofore, to spare no pains in informing our readers of everything new and *useful*, and we shall in the

future, as in the past, be exceedingly careful not to recommend any of the worthless nostrums or other humbugs which are constantly advertised, but we try carefully, as soon as possible, all new things that promise to be useful, and as soon as the truth can be determined concerning them it will be made known in the pages of the JOURNAL.

We advise our readers to give these advertised humbugs a wide berth, for if any one has anything that is really useful, he does not go round the country peddling it out to dentists, but he lays it before the profession through the journals, and every dentist in the land is then made acquainted with its merits and demerits. We do not claim infallibility in journalists by any means; but they usually have better facilities for investigation, and many sources of information that many have not, and are generally very careful not to deceive their patrons.

The MISSOURI JOURNAL will be sent for $2.50 in advance in the future, and we shall feel under obligations to any of our friends who will exert themselves to send us paying subscribers. Our list has steadily increased from its inception, although we have at times thinned out our subscription books by throwing out the names of some who, we had become convinced, never intended to pay up, and we intend to do more of this in the future.

It is not a very favorable commentary upon the profession to state that it does not probably support to-day a single dental periodical in this country. The current periodical literature of the profession is at this day supported to a great extent by those who have something to sell to practitioners, and can therefore afford to publish journals for the sake of the advertising it allows them to do.

That is to say, we buy our teeth, gold foil, amalgan, forceps, excavators and current literature at the same shop and of the same parties.

When this is not the case the deficit is made up by the editors, who, of course, do the necessary labor for nothing. We do not complain of this, as we accepted the labor with a full understanding of all these things; but we allude to it now only to predict that this will some day be materially changed.

We have been encouraged in our work by many a kind word, and we assure our readers and friends that our editorial labors are by no means grudgingly performed, and our highest ambition is to make the MISSOURI DENTAL JOURNAL useful to its readers.

J.

JOURNALISTIC.

The *Dental Cosmos* for December is at hand, and we learn with regret that Drs. McQuillen and Ziegler will no longer be connected with its editorial management.

A note, by the proprietor of the journal, informs us that the editorial supervision will in the future be *impersonal*. We apprehend that the readers of the journal will miss the editorial supervision of Drs. McQuillen and Ziegler; but the *Cosmos* will, however, in the future as in the past, be a useful medium of communication between the members of the profession, and will remain as a standing testimonial, indicative of the business capacity and enterprise of its proprietor.

In the present No. of the *Cosmos* is an interesting article by Dr. S. A. Bogue, of New York, giving a short description of the meeting of the German dentists at Berlin last summer. It seems, from the doctor's account, that the dentists in Germany are discussing pretty nearly the same questions, which generally occupy the attention of our societies and associations at the present time.

An article "On Root Filling," by A. J. Rederick, D. D. S., shows that some labor has been expended in its preparation, and, as a consequence, it presents some points of interest; attempt at drilling to the apex of fangs, shows the futility of such efforts. This had been recognized before by a great majority of good operators, nevertheless the experiments detailed upon this subject are interesting, also the description of the nerve canals in the different classes of teeth. We would, however, dissent from the author's conclusions in regard to the efficiency of capping pulps. The very facts detailed by the author in this article should

make us exceedingly careful about killing the pulps of teeth. He shows plainly, that in many cases obstacles exist which absolutely prevent the filling of the canal to the apex, and as we cannot determine the condition of the canal before we have destroyed the pulps, had we not better take some chances of trouble through capping, always remembering that it is time enough to kill the pulp after we have failed to preserve it alive. In regard to the breaking of broaches in the canals, he says: "should it break it will do no harm;" and again, he says: "another plan, very effectual, is to take small nerve broaches, rub down between a pair of pliers the barbs, wind gold around, as in the other case, cut off right length and force home with a nerve plugger." If the doctor had seen as much of this kind of practice as many have seen in this city, he would not recommend it to others. The worst cases of discoloration that we have ever seen have resulted from these broken broaches in the fangs of teeth. With the exception of these two points, the article is worthy of commendation.

The *Nashville Journal of Medicine and Surgery* has an article by Dr. William M. Scarcey, upon the prevention of scarlatina. The effect of belladonna and other reputed preventives are only hinted at, as they are probably not worthy of any confidence; but the author thinks he has discovered something in relation with this disease that has led him to a philosophical practice for its prevention.

He states that in several families of considerable size, when the children had been exposed to scarlatina, he had observed, upon examination, that there were unmistakable evidences of inflammation in the throat, involving generally the tonsils and neighboring parts. In some thirty cases of that kind, he had tried cauterizing the inflamed parts with nitrate silver solution, one drachm of the salt to an ounce of water; in only two cases were the children thus treated attacked with scarlatina.

The treatment may have been judicious and useful, but the assertion that this inflamed condition of the fauces was due to an influence exerted by any morbific agent connected with scar-

latina, is entirely gratuitous, and if the author will extend his observations so as to take in all those who have not been exposed to scarlatina in his investigations, he will find that it is quite an exception to find a throat entirely free from all appearances of inflammatory action. This is not only true as being the case during the prevalence of scarlatina, but it is also true at all times, and as far as our observation goes, in all parts of the United States. Will some of our wise medical friends satisfy themselves of the truth of this statement, by careful observation, and then let us know the cause of this almost universal inflammatory throat affection?

O. A. Battson, of Claremount, Ills., thinks he has discovered the cause of milk-sickness in the Eupatorium Ageratoïdes.

An article from the *Lancet* gives cases of indolent ulcers of the legs, catarrh of the nasal passages, etc., treated with carbolic acid successfully.

Electricity cures many cases of neuralgia.

The *Register* for November has a communication from H. Scott, describing a case which had come under his observation. The patient had a superior molar tooth, the palatine fang of which was denuded to its apex. He advised the immediate removal of the tooth; but as the patient objected to such summary practice, he proceeds as follows: "The inflammation had not risen to the degree when *pustulation* was likely to terminate it; and as there was little show for encouraging the formation of abscess by emollients, on account of the position, I told him we must direct our attention to the cure by first intention. I therefore *truncated* the parts by free incisors, etc.; and he states that he prescribed a solution of "*sacharum plumbi*," to be applied with wet rags, etc.

We call attention to the description of this case, and of the treatment on account of the peculiarity of some of the doctrinal views hinted at, and the efficient method of treatment pursued. We were not aware that *pustulation* generally terminated inflammations; but it may be that our author intended to indicate the process of pus formation by this word *pustulation*, which, how-

ever, signifies quite a different thing. As regards treatment, he states that he "truncated the parts," which all will agree was a summary way of proceeding. As truncated means *cut off*, we would have been glad to learn whether he merely cut off the tooth, or whether he also cut off the soft parts or the whole jaw. Then he prescribed "sacharum plumbi." If he means sugar of lead, why don't he say so, and not murder the Latin language, and show his own ignorance by attempting to use words that he evidently knows nothing about himself? As to this last effort, "sacharum," there is no such word in any language; the word *saccharum*, it is true, has been used; but even that can hardly be called a Latin word, whilst its connection with plumbi, to indicate sugar of lead, is too much for the dispensatory. If our author intended to state that he had scarified the parts instead of stating that he had cut them off, as the rest of the article rather indicates, would it not have been better to have said so, instead of attempting to lug in some formidable word which might astonish those who usually express themselves in a more modest manner, and who think any one learned who uses words which they cannot understand.

Descriptions of cases given in plain language, that every one can easily understand, are generally instructive and interesting, and eminently fitted for publication in our periodical literature; but these monstrous abortions in the way of language are anything but creditable to our profession.

The *St. Louis Medical and Surgical Journal* for November, which closes the volume of 1871, is before us. Among other communications is one by Joseph R. Beck, M. D., upon the use of strychnia. Dr. Beck is quite enthusiastic over this drug. In speaking of neuralgia, he says: "In all the cases of this ailment which have been under my care, not a single one has refused to yield, and that in periods of time varying from six to thirty-six hours. This then for neuralgia, *that it yields promptly to treatment by strychnia, and that it never returns.*" The "Elixir Cinchona, Iron and Strychnia," in tea-spoonful doses is preferred to other preparations; there being $\frac{1}{100}$ part of a grain of strychnia to

the teaspoonful. The cases detailed by the author, which had been successfully treated in this way, seem to indicate that it must have been a valuable remedy in these cases, the majority of which were facial neuralgias.

The author does not seem to recognize the fact that facial neuralgia arises from various causes, the most frequent of which is to be found in a diseased condition of the teeth, and we shall be very slow to believe that these cases, dependent upon active disease in the dental organs, will be *permanently* cured by the administration of strychnia. The removal of the obvious cause of a great many of those facial neuralgia cases is absolutely necessary to a satisfactory result.

In a notice of a work lately published in Vienna by Dr. Gussenbauer, upon the "Immediate Union of Wounds," we observe that the author denies the process as described by Macartney, Paget and Thiersch, in toto.

An extended series of experiments and of microscopic observations, has led him to believe that there is always an intermediate substance through the organization of which the new union is effected.

The *Chicago Medical Examiner*, one of the soundest medical journals in the country, reaches us again since the fire, and presents as respectable an appearance as ever.

We notice in it an article by J. D. Brown, F. R. C. S., Eng., in which the author strongly recommends a position for the patient, in cases of suspended animation, either from the administration of anæsthetics or from other causes, which shall determine the flow of blood to the brain. Several cases are cited, which were apparently saved after they had ceased to breathe and the blood had ceased to circulate, by dropping the head down, so that if there be a little arterial blood in the lungs and left side of the heart, it may be poured in that way into the brain, and thus stimulate it to a renewed action, when lungs and heart will resume their normal functions. He says, dragging out the tongue, and attempts at artificial respiration, are entirely useless. This method has the merit of being simple and easily put in practice; but we doubt very much whether the arterial blood in the lungs particularly would flow into the brain, even if the

head is placed in a position lower than the body. The practice, however, may be good, even if his version of its philosophy be erroneous.

The *L'Art Dentaire*, the Dental Journal of France, contains an article upon pyroxyline base, from which we learn that the *Preterres*, in New York and in Paris, have been chiefly instrumental in bringing into use this new material for dental plates.

M. Dubreuil contributes an article upon a variety of fracture of bones of the face and its diagnosis.

Jarjavay and Richet had observed a loss of sensibility of one half of the upper lip, following fractures of the facial bones, but Jarjavay thought that anæsthesia of the lip was a symptom of fracture of the malar bone, whilst Richet thought it indicated fracture of the superior maxillary. The author states that he has had an opportunity of making two autopsies when this loss of sensibility had occurred, and in both cases the malar bone and the superior maxillary were both fractured, the infra-orbital nerve in both cases was ruptured, one within the canal and the other at the place where it issues from the infra-orbital foramen. The above contains all of the dentistry to be found in this number of the *L'Art Dentaire*, with the exception of a translation from the English upon accidents which may happen in the extraction of teeth, and some description of apparatus used in remedying lesions of the face.

In the *Druggists' Circular* for December, we find an article translated from the Spanish, which claims that there are several varieties of "Cundurango," and that much that has been sent to foreign countries has been spurious. This may all be true, but this method of explaining its general worthlessness as a cancer-curing agent, looks a little suspicious, and taken in connection with other suspicious circumstances attending its introduction to the public, will scarcely suffice to bolster up its lost prestige, and induce the medical fraternity to give it another trial, for the special benefit of those who have, to a considerable extent, monopolized the stock of the drug in this country. Our faith in the efficacy of the so-called cancer-curer is not increased by this last expedient, which looks too much like one of the parts which were to be acted out in the drama of the *grand speculation.*

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] FEBRUARY, 1872. [No. 2.

From Transactions of the Odontological Society [May 1871.]

NOTES ON THE FIRST OR MILK DENTITION OF THE MAMMALIA.

BY WILLIAM HENRY FOWLER, F.R.S., *Hon. Member of the Odontological Society of Great Britain.*

GENTLEMEN:—Having been requested by our respected President to address you this evening on some subject connected with the comparative anatomy of the teeth, I thought that it might be of interest to the members of the Society if I put together, in a connected manner, some observations collected at various times and from various sources relating to the first or milk dentition of those animals of the class Mammalia in which a change of teeth takes place, although I am afraid that there will be little in the communication which is, strictly speaking, new to science.

The structure, modifications of form and position of the permanent teeth of most mammals, the relation of these organs to the habits and food of their possessors, and the indications they afford of general affinity or the reverse, have long formed a favorite study with naturalists, and are now, on the whole, very well understood. With the milk teeth it is different. Their comparatively small size and rudimentary character, and especially the short period of life during which they are present, render them far less easy of examination than the permanent teeth. In many animals they are, in fact, so evanescent, that it is a matter of considerable difficulty to obtain specimens at the right age to study their characters, much more such a series of

specimens as is required for tracing the various stages of their development and replacement. Yet to the zoologist they are replete with interest and importance. Being on the whole far less teleologically modified than the permanent teeth,—that is, having a less direct relation to the particular mode of life of the species,—they are often more important guides to affinity; and their characters, form, development, and persistency, are all circumstances to be taken into consideration in studying classification. Their importance has been recently illustrated by Rutimeyer among the ungulated groups, in which he shows that the milk teeth of recent forms often present more or less resemblance to the permanent teeth of their extinct allies, or ancestors as they are supposed to be upon the hypothesis of evolution.

The dentition of all mammals consists of a definite set of teeth almost always of constant and determinate number, form, and situation, and, with few exceptions, persisting in a functional condition throughout the natural term of the animal's life. In many mammals these are the only teeth which the animal ever possesses; the set which is first formed being permanent, or, if accidentally lost, or decaying in extreme old age, not being replaced by others. These animals are called *monophyodont.* But in the larger number of mammals, certain of the teeth are preceded by others, which may be only of a very transient, rudimentary, and functionless character, or may be considerably developed and functionally occupy the place of the permanent teeth for a somewhat lengthened period, during the growth and development of the latter and of the jaws. In all cases these teeth disappear before the frame of the animal has acquired complete maturity, as evidenced by the coalescence of the epiphyses of the osseous system.

As these teeth are, as a general rule, present during the period in which the animal is nourished by the milk of the mother, the name of "milk teeth,"—"*dents de lait*,—"*milchzähne*,"—has been commonly accorded to them, although it must be understood that the epoch of their presence is by no means necessarily synchronous with that of lactation. Animals which possess such teeth are called *diphyodont.*

No mammal is known to have, as a normal condition, more than two sets of teeth.

When milk teeth are well developed, and continue in place during the greater part of the animal's growth, as is especially the case with the Ungulata, and, though to a less degree, with the Primates and Carnivora, their use is obvious, as together they form structurally a complete epitome on a small scale of the more numerous and larger permanent set, and, consequently, are able to perform the same functions, while allowing of the gradual maturation of the latter, and especially while the jaws of the young animal are acquiring the size and strength sufficient to support the permanent set.

Those animals, therefore, that have a well-developed and tolerably persistent set of milk teeth may be considered to be in a higher state of development, *quoad* dentition, than those that have the milk teeth absent or rudimentary.

It is a very general rule that individual teeth of the milk and permanent set have a close relationship to each other, being originally formed in exceedingly near proximity, and the latter coming to occupy the position in the alveolar border temporarily held by the former, they are spoken of respectively as the predecessors or successors of each other. But this is not invariably the case; milk teeth may have no successors in the permanent series, and, what is far more general, permanent teeth may have no predecessors in the milk series.

The complete series of permanent teeth of most mammals forms a complex machine, with its several parts adapted for different functions; the most obvious structural modification for this purpose being an increased complexity of the individual components of the series from the anterior towards the posterior extremity of such series.

Since, as has just been said, the complete series of the milk teeth often presents structurally and functionally a similar machine, but composed of fewer individual members, the anterior of which are as simple and the posterior as complex as those occupying corresponding positions in the permanent series,—and since the milk teeth are only developed in relation to the anterior or lateral, never to the most posterior of the permanent series,—it follows that the hinder milk teeth are usually more complex than the teeth of which they are the predecessors in the permanent series, and represent functionally

not their immediate successors, but those more posterior permanent teeth which have no direct predecessors. This character is clearly seen in those forms in which the various members of the molar series are well differentiated from each other in form, as the Carnivora and also in Man.

In animals which have two sets of teeth the number of the teeth of the permanent series which are preceded by milk teeth varies greatly, being sometimes as few as one on each side of each jaw, or sometimes including the larger portion of the series.

Although there are difficulties in some cases in arriving at a satisfactory solution of the question, it is, on the whole, safest to assume that when only one set of teeth is present these correspond to the permanent set of the diphyodonts. When this one set is completely developed, and remains in use through the animal's life, there can be no question on this subject. When, on the other hand, the teeth are rudimentary and transient, as in the whalebone whales, the upper incisors of ruminants, &c., it is possible to consider them as representing the milk series; but there are weighty reasons in favor of the opposite conclusion.*

I must now illustrate these points by passing in review the best-known facts regarding the milk dentition of the different groups of mammals in order, beginning at the lower end of the scale.

As the MONOTREMATA have no calcified teeth they need not detain us.

The large order MARSUPIALIA consists of animals which, though intimately related in many most important anatomical and physiological characters, differ vastly in their general external form, their habits, and also in the characters of their teeth; these differences being quite as great as those found among many different orders of the large placental series of mammals. It is therefore the more surprising to find, and strongly illustrates the importance of the study of this subject in endeavoring to trace real affinities, that they present certain characters common to all the members of the order, and differing from those of other mammals, in their milk dentition.

* Some of these are given in "Remarks on the Homologies and Notation of the Teeth of the Mammalia."—"Journal of Anatomy and Physiology, May, 1869.

In the zoology of Castelnau's "Expedition dans l'Amerique du Sud,—Mammiferes" (1855), p. 99, Professor Gervais describes the absence of predecessors to the permanent teeth, except as regards the last premolar, in the American genus *Didelphys*, or Opossums, animals which have a very fully developed set of teeth, consisting of incisors, canines, premolars, and molars, resembling generally in their construction those of the placental carnivores. More recent and independent observations upon a series of young opossums of several species contained in the museum of the College of Surgeons have afforded a detailed description of the order of development of their teeth,* showing that the last of the three simple, compressed, pointed crowned premolars in each jaw is preceded by a more complex molar-like tooth, the change taking place when the animal is rather more than half-grown, and that none of the teeth, either in front or behind this one, are preceded by milk teeth. This is the more important to note because previous authors have described the protruding apices of the permanent incisors, canines, and premolars of the young opossum as milk teeth, imagining that a succession analogous to that of the placental mammals must take place.

But the most remarkable circumstance relating to the milk teeth of the marsupials is, that not only in the American opossums, but in all the other known forms of the order, the Thylacines, Dasyures, Bandicoots, Phalangistas, Kangaroos, Wombats, &c., however different the number, form, and function of the permanent teeth may be, the same rule prevails with regard to the succession, no tooth having a predecessor but the one which, by its structure and position, appears to be the homologue of the posterior premolar of the placental mammals. It is, moreover, important to note that there is an extreme difference in the amount of development of this milk molar tooth, and in its permanency; as in the Thylacine it is most rudimentary in form and size, and extremely transient, being shed or absorbed while the animal is not more advanced in size and development than a newborn puppy, and before any of the other teeth have cut the gum, and being, therefore, quite functionless; while in the Rat-Kan-

* See "On the Development and Succession of the Teeth in the Marsupialia." Philosophical Transactions," 1867, p. 631.

garoo (*Hypsiprymnus*) the corresponding tooth retains its place and function, until the animal has nearly, if not quite, attained its full stature, and is not shed and replaced by its successor until after all the other teeth of the permanent series, including the posterior molars, are fully in place and use.

For details of these changes, I must refer to the paper in the "Philosophical Transactions" before cited, here remarking, by way of correction, that there are still some marsupials in which no succession has yet been observed, such being the Wombat (*Phascolomys*), the Koala (*Phascolarctos*), *Myrmecobius*, and the Dasyures; but it must be remarked that, in the case of some of these, specimens at the right age have not yet been examined.

We thus see that, among the lowest group of existing mammals which have true teeth, the milk teeth, when present, are reduced to the smallest possible number consistent with symmetry, *i. e.*, one on each side of each jaw; that they are also, in some forms, reduced to the most rudimentary condition, and to the most transient duration, and that in some forms they appear to be entirely absent.

This opens an extremely interesting question with reference to the relation of the succession of teeth in mammals with that of the inferior vertebrate animals. How is it that in the lowest known mammals the diphyodont condition is so feebly pronounced, while in reptiles and fish a large and apparently unlimited reproduction of teeth takes place? To enter into this discussion satisfactorily it would be most important to know the condition of succession of the earliest known progenitors of the existing mammals, the mesozoic marsupials, of which the present Australian forms appear to be the most direct surviving descendants; and it would be necessary, if it were possible, to go still further back to *their* progenitors, of which we at present know nothing.

A very considerable number of jaws and teeth of various forms of mammals, from Triassic, Oolitic, and Purbeck beds, have been already discovered and described,* but among them there is scarcely any evidence of a successive dentition. The only indications of any change at present noted are two in number:—

* See especially Owen on Mesozoic Mammalia.—"Palæontographical Society," vol. xxiv. 1870.

(1) In a specimen of the lower jaw of *Triconodon occisor*, in which the last molar is not fully developed, the last premolar appears to be not quite in place, and on a lower level than the preceding premolars and the succeeding true molars; from which it may be inferred that it had recently replaced a preceding tooth, otherwise it would, in all probability, be fully developed as soon as the tooth which is placed immediately behind it in the jaw.* (2) In a specimen, to which the name of *Triacanthodon serrala* is given, the form of the tooth which appears by its situation, to be the last premolar, somewhat resembles that of a true molar, so as to suggest that it may possibly be a retained milk molar; but its describer remarks that he has "not felt justified to hazard this unique and brittle evidence by burrowing after a possible hidden germ of a successional tooth."†

It will be observed that these two cases both indicate (though they are not sufficient to prove) that if a succession took place in the early forms, it was only in that particular tooth to which it is limited in modern marsupials.

It would appear, then, probable, that in the transition from the lower vertebrate to the mammal, by whatever process it took place, the indefinite repetition of the teeth of the former was lost, and that a monophyodont condition supervened, while the peculiar definite diphyodont mode of succession found in the most highly organized members of the class is a superadded and special mammalian characteristic.

On a general plan of evolution, carried out on a principle at present unknown, it is easy to imagine the stages of a gradual formation of a set of milk teeth in addition to the permanent set, and we cannot fail to perceive the great advantages of such a set to their possessor in their fully developed condition; but Natural Selection, like all other hypotheses hitherto propounded, appears to me, in this as in so many similar cases, quite inadequate to account for the early stages of the process, however it may have aided in its perfection.

The very singular and rather heterogeneous group of animals associated together to form the order EDENTATA, which obviously

* *Loc. cit.*, *p. 70.*

† Owen, *loc. cit.* p. *73.*

belong to a very low mammalian type, nearly as low, in some respects, as the marsupials, are very aberrant in regard to their teeth. These organs are often entirely absent; and when present, are of a comparatively simple form, have no covering of enamel, are not distinctly divided by form into several groups, as incisors, canines, molars, &c, and are most variable in number, sometimes being multiplied to an immense extent (as in *Priodontes.*)

All the Edentata were, for a long time, thought to be monophyodonts, until the discovery in one genus of Armadillos (*Tatusia*) of a very complete set of milk teeth remaining in place until the animal has nearly attained its full stature,* showed the difficulty of generalizing upon such a subject. It is, however, remarkable that, although a change of teeth has been shown to occur under very similar conditions in all the three species of this genus, it has not yet been ascertained to take place in any of the other genera of the group. Of course, this may be owing to insufficiency of observation.

With regard to the Sloths, I have myself examined a sufficient number of young individuals to feel almost sure that no change does take place in them; although, as mentioned in another paper,† these are only negative observations, and require further confirmation.

No specimen of *Orycteropus,* or Cape Anteater, which I have examined, including a very young one in the Museum of the University of Cambridge, affords any evidence of a succession of teeth.

In all the members of tho great order UNGULATA, including both the Artiodactyle and Perissodactyle sections, which are all more or less vegetable-feeders, the milk teeth are well developed, and retained longer in proportion to the general growth of the body than in any other group of mammals. They remain nearly always until after the complete adult stature has been attained, and until the reproductive powers have come into activity.

* See Rapp, "Die Edentation," second edition (1852), p. 69; Gervais, "Hist. Nat. des Mammiferes," 1855, vol. ii, p. 252; Krauss, "Archiv fur Naturgeschichte," 1862, p. 19; Flower, "Proc. Zool. Soc.," 1868, p, 378; and "Journal of Anatomy and Physiology," May, 1869, p. 265.

† "Journal of Anatomy and Physiology." May, 1869, p. 266.

Thus, in the Horse, the last milk molar is not replaced until the end of the third year, and in the Ox often not until the fourth year, while some of the deciduous front teeth are retained to a still later period.*

I have endeavored to fix, by a more precise method, for comparison of different groups, the period of retention of the milk teeth, as related to the general development of the body; and, for this purpose, have noted, in several species, the condition of the various epiphyses of the skeleton at the time that the last milk molar is replaced by its permanent successor. Unfortunately, the available materials, even in the Museum of the Royal College of Surgeons, are very insufficient for making such an extensive and accurate comparison as is desirable, as it has not hitherto been the custom to collect series of skeletons of even the most common animals at such ages as would be required to afford the requisite data. But the examples now given will, I hope, call attention to this subject.

The only genus among the Ungulata in which I could find a sufficient series of specimens of the right age to determine this point is that of the Chevrotains or Pigmy Deer (*Tragalus*), so long and erroneously associated with the Musk Deer. In these animals the last milk molar is shed after the three elements of the innominate bone have completely coalesced, after the coracoid has united with the scapula, and after the epiphyses of the lower end of the humerus, the lower end of the tibia, and the upper end of the radius are thoroughly joined with the shaft of the bone, but before all the other epiphyses of the principal long bones of the limbs have united.

I have little doubt but that other Ungulata follow much the same rule, although, as just said, I have not the exact data before me.

Of the characters of the milk teeth of the Ungulata I need

* See Rosseau, "Anatomic comparee du Systeme Dentaire, chez l'Homme et chez les principaux Animaux." Second Edition, 1839. For the milk teeth of Ungulata, see Rutimeyer, "Beitrage zur Kenntniss der fossilen Pferde und zur vergleichenden Odontographie der Hufthiere uberhaupt," Verhand. Naturf. Gesellschaft in Basel, 3ter Th., p. 588. 1863.

say little, as they are, perhaps, better known than those of most other mammals, owing to their long persistence.*

One of the greatest contrasts in the period of shedding of the milk teeth to the last group is afforded by the aquatic division of the order Carnivora, the Seals, in which the teeth of this set entirely disappear either before or within a few days after birth, and are perfectly functionless. Instead of remaining a long time after lactation has completed, they have passed away nearly before it commences, and allow the whole of the permanent teeth to come into place nearly simultaneously, and to be actually fully developed, while the elements of the innominate bone and of the scapula are widely separated, while none of the epiphyses of the long bones are united with the shaft, or even fully ossified, and while the atlas still consists of three distinct bony elements.†

In the ordinary terrestrial Carnivora, such as the Dog and the Cat, the milk teeth are more complete, and serve, for a short period, a functional purpose, though not remaining nearly so long as in the Ungulata. Unfortunately, I am not enabled at present to give the exact comparison with the condition of the skeleton.

In tracing affinities between these forms and the highly modified aquatic Carnivora or Seals, some naturalists have selected the Otters and others the Bears as those among the ordinary or terrestrial forms which present the nearest affinity to the latter The arguments are tolerably well balanced, especially when we

* Hyrax manifests its ungulate affinities in the size and functional persistence of its milk teeth.

† In a specimen of the Common Seal (*Phoca vitulina*) which was lately born in the Gardens of the Zoological Society, Regent's Park, and which survived its birth exactly one week, the only traces of milk teeth remaining were small rudiments of the upper canine and one molar on one side only. All the permament teeth were in a nearly equal state of development. For the milk dentition of the seals, see Steenstrup, "Melketandsættet hos Remmesælen, Svartsiden og Fjodsælen" (*Phoca barbata, Ph. Gronlandica,* and *Ph. hispida*). Vid. Medd. f. d. Naturh. Forening, 1860. Copenhagen, 1861. Pp. 251-261. —Reinhardt, "Om Klapmydsens (*Cystophora cristata*) ufodte Unge og dens Melketandsæt." Naturhist Foren Vidensk Meddelelser. Copenhagen, 1864.—Van Beneden, "Sur les Dents de Lait de l'Otaria pusilla." Bulletins de l'Acad. Roy. de Belgique, 2me serie, tome xxxi., No. 3, Mars, 1871.—Flower, "Journal of Anatomy and Physiology," May, 1869, p. 269.

take the peculiarly modified hind-foot of the *Enhydris* or Sea Otter into consideration; and so this is a case on which the condition of the milk dentition may throw some light.

In the Bears the milk teeth are smaller in proportion to the size of the permanent teeth, and more transient than in any other of the Fissiped Carnivora. In the skeleton of a young Polar Bear (*Ursus maritimus*) in the Museum of the Royal College of Surgeons, all the permanent teeth are in place, while the elements of the innominate bone and the coracoid, as well as all the epiphyses of the limb bones, are quite distinct.

Now, on the other hand, the Otters, even including the Sea Otter,* have nearly as well developed and persistent milk teeth as most of the other members of the order; and in this respect, therefore, they do not appear to show any transition towards the *Pinnipedia*.

In none of the toothed members of the order Cetacea has any change of dentition been observed. Some of the SIRENIA as the Dugong, on the other hand, appear to show an imperfect or rudimentary diphyodont condition, affecting only the incisor teeth, which may be a retrogade state, supposing these animals to be an aquatic offset or modification of the great ungulate type.

The Rodentia offer some anomalies and considerable variation in the characters of their milk dentition. Thus the two great incisors in the front of each jaw, which are so characteristic of the group, appear never to have predecessors, although in the *Leporidæ*, which have at one period of life as many as three

* A good series of the skulls of the Sea-Otter (*Enhydris marina*) are preserved in the Anatomical Museum, at Berlin. In one specimen, 4 8-10 inches long, the milk canines and the two posterior milk molars are in place in both jaws, though the incisors and anterior milk molars have been replaced by the permanent teeth. In another skull, said to be that of a female, five inches in length, and therefore very nearly full grown, the milk canines have been there, but the second and third upper milk molars, and the third lower milk molar are still retained, though the true molars of both jaws are in place. The milk dentition of this animal is $i\ \frac{3}{2},\ c\ \frac{1}{1},\ m\ \frac{3}{3}$; the adult detention, $i\ \frac{3}{2},\ c\ \frac{1}{1},\ p\ \frac{3}{3},\ m\ \frac{1}{2}$.

incisors on each side of the upper jaw, one of them (the middle one) is deciduous at an early age, and may, perhaps, be regarded as a milk tooth.

With regard to the molars, the rule seems to be the following. When there are only three (as in the Common Rat), or fewer than three (as in the Australian Water Rat, *Hydromys*), these are all true molars, and have no predecessors. These animals, then, are truly monophyodont, as long since shown by Rousseau,* though his observations have been everlooked in more recent works.†

When the number exceeds three it is by the addition of teeth to the front of the series, which are premolars, and are preceded by milk teeth. In the large majority there is only one on each side of each jaw, but in the *Leporidæ* the number is three above and two below.

A remarkable variation is observed in the character of these teeth, and in the time at which they are matured and shed. Thus in the Guinea-pig and its allies, the one milk molar—a small, though tolerably well-formed tooth—is absorbed or shed a short time before birth; while in the Porcupines and Beavers the corresponding tooth is retained until the animal has nearly attained the adult condition.

Observations on the condition and period of development of the milk teeth of numerous genera of Rodents are still needed.

As regards the INSECTIVORA, the few species in which the milk teeth have been accurately observed present great differences. In the Hedgehog (*Erinaceus*)‡ and the Tenrec (*Centetes*)§ the first set of teeth are well developed and functional, being retained until the animal is nearly full-grown; while in the Moles|| and

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* Op. cit., p. 165.

† Thus, in the catalogue of the Osteological Series of the Museum of the Royal College of Surgeons (1853), vol. ii., the dental formula of the genus *Mus* is given as $i\ \frac{1-1}{1-1}$, $p\ \frac{1-1}{1-1}$, $m\ \frac{2-2}{2-2} = 16$: of *Hydromys*, $i\ \frac{1-1}{1-1}$, $p\ \frac{1-1}{1-1}$, $m\ \frac{1-1}{1-1} = 12$.

‡ Rousseau, Op. cit., p. 333.

§ Reinhardt, "Mælketandsættet og Tandskiftningen hos *Centetes ecaudatus*." Oversight over d. K. D. V. Selsk. Forhandl. o. s. v. f. 1869. No. 3.

|| Spence Bate, "On Dentition in the Mole (*Talpa Europæa*)."—"Trans. Odont. Soc.," vol. v. p. 261 (1867).

Shrews* they are rudimentary and comparatively transient, especially in the latter family.

Very little is known of the milk dentition of the other families of this order.

The CHIROPTERA, or Bats, offer a wide and interesting field for observation to any one who has the opportunity. Out of about four hundred known species, the milk dentition has been described in not more than three or four, and only imperfectly in these.† It oppears to be always of a very rudimentary character and transient duration.

The PRIMATES, on the other hand, are much better known, all having a well-developed and functional set of milk teeth, which persist about as long as in the terrestrial Carnivora, and therefore for a much shorter time than in the Ungulates.‡

I find that in the Monkeys of the genera *Macacus* and *Cercopithecus* the last milk molar is shed when the elements of the os innominatum have nearly coalesced, and the coracoid is united to the scapula though with traces of the original separation remaining, and after the union of the epiphysis of the lower end of the humerus, though before that of any other of the principal bones of the limbs.

In Man the last milk molars are shed about the tenth year, which is a relatively earlier period to that just described; for the ischium, ilium, and pubis are still separate, also the coracoid and the scapula, and all the epiphyses of the long bones.

I have not said anything of the relative order of appearance and of persistence of the difference of the different members of the milk series among themselves; but this is a point that should be attended to in a complete treatment of the subject, although it would lead me too far into minute details to be consistent with the present sketch. I may remark, however, that certain differences have been noted in the relative order of disappearance of some of the milk teeth, and in the production of their permanent successors, between Man and the anthropomorphous Apes; thus, the permanent canines of the latter replace their

*Owen, "Odontography," p. 423 (1845).

†Rousseau, Op. cit., 321 (*Vespertilio*). Owen, Op. cit., p. 433 (*Pteropas*).

‡The very aberrant lemuroid genus *Chiromys* (the Aye-Aye of Madagascar) is quiet exceptional, both in its adult and milk dentition. For the latter see Peters, "Abhandlungen der Konigl. Akad. d. Wissenschaften." Berlin, 1865.

deciduous successors at a later period compared with the molars than in Man. Examples of similar variation of the order of succession in other not very dissimilar forms will frequently be met with, although their details have not hitherto been observed and recorded as fully as they deserve.

I trust that I have said enough, in this imperfect outline, to prove the importance and interest of a closer study of the characters and period of development of the milk teeth, and, by showing the deficiencies of our present knowledge, to stimulate members of this Society, who may have leisure and opportunity to contribute whatever is in their power towards a fuller elucidation of the subject.

Operative and Surgical Department.

DEAD BONES.

By Henry S. Chase.

In an article on ossified pulps in the American Journal for January, page 389, Dr. S. P. Cutler says: * * * * "So long as a tooth has a live pulp in it. After the death of this important tissue we are dealing with not exactly dead men's bones, but with dead bones themselves."

I must certainly disagree with the Professor in this statement. A tooth is not necessarily dead, when the *pulp* is dead, or extirpated. On the contrary, it is a living member of the body as long as its periosteum or pericementum is alive. Circulation of blood plasma takes place in the cementum of the root, and undoubtedly more or less in the dentine of the crown. It certainly does in the dentine of the root, for otherwise absorption of the roots of teeth could not be effected. A *dead* bone or tooth cannot be differentiated into connective tissue cells, any more than a pslinter or bullet can be, and yet the roots of childrens' temporary teeth, which have had their pulps destroyed and removed, are perfectly absorbed in due time to make place for the permanent tooth. Of course, death of a pulp is sometimes the cause of inflammation, and death of the periosteum, and

in such a case nature makes efforts to throw off the whole organ. I have often known pain to be produced in cutting the dentine of the interior of a root, from which the pulp had been absent several years, and the pain was of the same character which is produced in cutting sensitive dentine of a crown in which there is a living pulp.

FILLING TEETH.---LOOKING FOR CAVITIES.

[To Students.]

By Henry S. Chase.

When a patient is presented for the examination of the teeth, care should be taken that a thorough one be made. It would not be very creditable to you, for a patient whose teeth you had put in perfect order (supposed) to return in six or twelve months with an exposed pulp from a cavity of decay which you had overlooked.

The teeth must be clean, and the mouth kept dry while a tooth is being examined. Saliva will fill a crevice and hide a defective fissure if it is narrow. Saliva will also destroy the delicate color which often reveals decay in a proximal cavity, though quite distant.

Commence with the posterior tooth, of one side of the jaw, and carefully examine each succeeding tooth until the distal tooth of the opposite side is reached. Crevices on the grinding, palatal and buccal surfaces of molars; crevices and pits on the grinding surfaces of bicuspids, and proximal surfaces of all these teeth must be examined carefully, with a very small hatchet excavator, indeed the most delicate one you have.

The gingival borders on the buccal surfaces of the teeth sometimes have corroded surfaces that are not blackened, and which are so small or narrow that only a small excavator would reveal them.

Use a magnifying glass to look for decay on proximal surfaces. A slight variation of color on the proximate grinding surfaces of bicuspids and molars indicate a cavity or decay on the proximal surfaces of the tooth, more or less remote. I have thus found a small cavity on the posterior proximal surface of

the second upper molar at the very neck of the tooth; its color having been reflected through a quarter of an inch of solid dentine.

A natural sulcus or pit is often to be observed on the palatal surfaces of upper incisors, which, in most cases, untimately becomes the seat of decay. The proximal surfaces of canines and incisors are easily examined when there is a large cavity, but when the cavity or seat of decay is extremely small it may not be discovered without separating the teeth with wedges or rubber; *never* with a file, for this purpose.

Wedging may *sometimes* be necessary also between the bicisped and molar teeth, but rarely. The front teeth, however, should be plugged at the earliest possible moment, if decayed, so that they may not have the appearance of having been plugged, which is not so necessary in the other teeth. The bicuspeds and molars have generally enough space between their necks to allow of an exploration of their proximal surfaces at this point, with a small excavator. Experience in detecting decay by slight change of color in the sound portion of a tooth is invaluable. Slightly magnifying eye glasses are, in many cases, useful for this purpose. A chart of the teeth should be at your side, on which you can mark the exact locality of each decayed tooth, and thus when you are through your examination you can show it to your patient, and, if a child, give it a copy to carry home to its parents, if desirable. This chart on which you have made the record should be kept by yourself until you have finished every operation there indicated, then you may know when you may dismiss your patient with the remark, "your teeth are now in perfect order, and you need not visit me again for six months," that every tooth has received the attention which it needed.

DAILY PRATICE.

[To Students.]

By Henry S. Chase.

Miss S. Periostitis complains of pain and soreness of the left upper lateral inscisor; says it was plugged four years ago. The operation was painful—never had pain in it before plugging, and had not suffered with it since the operation, until now.

I find a not very good plug on the median proximal surface; pretty large. The tooth is loose, and discolored enough to think that the pulp is dead. The dead pulp, owing to its chemical disintegration is producing pericemental inflammation; in other words this is a case of Dental Periostitis. The gum about this tooth is red and inflamed, but there is no perceptible swelling of the soft parts. There has been pain two days.

What shall I do?

I remove the plug because it is not very good. If it had been good, I would have drilled into the palatal sulcus of this tooth until I had opened the pulp cavity. As it was, I cut through the plug cavity into the pulp cavity with excavators and drills. I was obliged to cut away a portion of the palatal wall of the plug cavity in order to get convenient access to the nerve or pulp cavity.

No pus followed the opening of the pulp cavity. I syringed with warm water many times, directing the patient to make suction on the tooth.

Patient directed to immediately apply a roasted fig to the soft parts above the gum, to promote suppuration, for I wish a discharge to take place through the gum, and the sooner the better. Besides the pain will sooner cease, for I feel sure that suppuration must be a result in this case, owing to the intensity of the pain. This tooth can be more surely cured by its having an evacuation of pus through the alveolus and gums, than by a subduing of the inflammation without suppuration, or by evacuation of pus through the tooth itself.

We shall see *why* after a little while.

Patient called next day.

Face is swollen; soft parts above the tooth swollen and *fluctuates* on pressure, showing the presence of pus. Patient passed a good night after applying a roasted fig. No pain now; pus oozing through the canal of the tooth; I lance the alveolar abcess at its most depending part; purulent fluid gushes forth; no further treatment until next day but one, when the patient is to call again.

Patient called; swelling of face subsided; some discharge still, from abscess; tooth less sore and not as loose.

I syringe the tooth with warm water; the rubber dam is now applied to the tooth to protect the mouth and lips from cauterization.

Kreosote is then introduced into the tooth and forced through the root by using soft rubber, and a plugger for a piston. This is done for some minutes but no kreosote appears at the external opening. I now wet a thread of floss silk in kreosote and force it into the root, and stop the plug cavity with cotton and sandarach varnish. The thread is much easier removed than loose cotton, and I am sure that the *whole* of it has come away, when I have removed it, which is not the case in regard to cotton wool. The patient is to let the tooth remain as I have prepared it, and call again in a week, unless it grows worse.

After a week—discharge has ceased, tooth tight in the socket; removed floss silk from root canal—not offensive; renewed floss silk and kreosote and temporary plug in crown, to remain thus two months before another visit.

I use ox. chlo. zinc for temporary plugs, which are to remain a month or two.

I wish to *try* this tooth. It may ulcerate again within two months. In such cases the root canal must be plugged pretty firmly with floss silk and kreosote. An *empty* canal would be more likely to become foul with fluids from the alveolus. But if the root is permanently filled I cannot treat the tooth again through the root, should treatment be necessary. In cases where one feels sure that the periosteal tissues, which have been the seat of disease, have been thoroughly cauterised, then the root may be at once permanently plugged, and I think the sooner the better. When there has been a fistulous opening for the escape of pus, and the latter has ceased to flow, and there is a *cicatrix* over the site of the fistula a few days after treatment, then we may suppose a permanent cure is effected. A little *depression* in the gum may be seen where the fistula was, owing to the gum contracting down into the hole made in the bone by absorption, during the flow of pus.

There is danger of *over treatment* in these cases. Let three days or a week intervene between operations on such a tooth. Nature must have a chance to effect a cure after your punching with kreosote. Kreosote does not *cure*, it only stops the inflam-

matory action, and then nature kindly steps in with her invisible forces and puts things right.

PERIOSTITIS.—CASE.—Mr. A. called to have his under first molar extracted; had ached two days; the tooth is plugged; had the appearance of dead pulp; removed plug and found pulp dead and disintegrated; syringe with warm water, and removing the water again with the syringe, which I do by slightly packing around the syringe wax; cavity dried, and then filled with kreosote, and a plug of cotton and sandarach varnish.

To call again in three days. No pain in tooth since last visit; opened pulp cavity thoroughly, and plugged root with Guillois' cement, carried into place with pellets of soft gold; crown cavity to be plugged with gold in one month if the tooth remains perfectly well.

Five weeks have passed; I plug the tooth to-day, as there has been no uneasiness in the tooth.

Guillois' cement will remain plastic for fifteen minutes. A little can be prepared for the first part of the operation, and more mixed as needed. Does os. artificiel, ox. chlo. zinc, and such like preparations, do for root filling?

My experience with the first two, for the last five years, enables me to answer that I know of nothing better for difficult cases.

PERIOSTITIS.—CASE.—Mr. B. called, with sore, and painful, central incisor. It is loose also. There is tartar about its neck, which probably extends below the gum considerably. The *socket* seems destroyed, although the gum stands up to its usual height owing to the presence of other teeth. Extraction is advised; patient won't submit to it; iodine is applied to the root and the gum, and patient dismissed; calls next day and has tooth extracted; root is covered with tartar to its extreme end. The pulp also, was dead, the encroachment of tartar having cut off the supply of blood to the root canal, as well as the periosteum.

FILLING TEETH.

The anterior proximal surface of the right under second molar is decayed, and the dentos above it being weak, is cut away, and

a compound cavity is formed, with a slot running back to a star-shaped plug in the center of the crown. While preparing this cavity I find the posterior proximal surface of the first molar decayed near the gum, leaving a good thick roof of dentos, to be seen only by the aid of a small mirror. It could more easily be plugged by cutting through the surface of the crown and making a compound cavity of it. In fact, that is the only way in which it can be plugged with the aid of the mallet. But as the dentos roofing the cavity is good and *strong* I dislike to increase the risk of decay, or weaken the tooth by cutting through the roof. I shall, therefore, prepare this as a simple cavity, having plenty of room to work in, having prepared the compound cavity first in the tooth adjoining.

Of course the anterior cavity must be plugged first, which I do, with *hand* pressure. First placing in the cavity a large piece of sponge gold, which will fill it before compression, I proceed to pack it thoroughly and carefully in every part. Now I can use number 10 adhesive foil in strips an eighth of an inch wide, which will easily adhere to the sponge gold. Great care, however, must be used to weld this foil to the sponge gold. To make sure of this, I weld only single thicknesses of foil until I get two or three layers consolidated. Then I proceed until the cavity is filled. After slightly smoothing the surface of the plug, I proceed to plug the opposite cavity. If I had plugged the latter first, I would then have had no alternative but to have *unroofed* the anterior cavity before plugging.

REMOVING ORAL CALCULI.

By Henry S. Chase.

In the February number of the Cosmos is the report of the discussion on the above subject. I was very much surprised that an eminent man in the profession should recommend the use of acids for the removal of "tartar" from the teeth.

Acids that will remove calculi from the surface of the teeth, will also act upon the tooth's substance itself, whether it be enamel dentine, or cementum. It was said in the discussion that acids would not act on the living bone tissue. If this was so then *decay* of the teeth would never take place. But it is not so. No one is justified in the use of acids for removing oral

calculi from the teeth. The advocacy of a contrary doctrine would give license to all the mountebanks and humbugs who follow circus caravans and county fairs, and use sulphuric acid for whitening the teeth, besides leading into error thousands of young practioners, who look to the older members of the profession for advice and correct practice.

Its removal should be accomplished by *mechanical* means, instead of chemical. Scalers, having a fine, sharp edge, should be used, of a variety of patterns and sizes. Small excavators and chisels are also useful. Every particle of calculus that can be seen with the aid of glasses should be taken away, particularly that portion at the neck of the tooth. Small particles often are hidden under the edge of the gums; none should be left here. The debris should be washed away with warm water, and the syringe. Finally, every portion of the tooth which has been subjected to the use of sharp instruments, or from which tartar has been removed, should be polished smoothly with pumice stone, and with chalk.

FOIL CYLINDERS.

By Henry S. Chase.

Williams, of New York, has introduced to the profession gold cylinders of different sizes, made of soft foil, but which become adhesive by *heating*. These cylinders are intended for "cylinder filling" according to the usual manipulation of gold cylinders. For regular cylinder fillings, I prefer to make my cylinders of Abbey's foil, and wind them pretty *tightly*, so as to have as much gold as possible in a small diameter. I find Williams' cylinders are too loosely wound for my purpose in this direction; on the other hand, I am delighted to find that I can use them as *adhesive pellets*. I have made quite a number of contour plugs of them; they adhere firmly and pack smoothly. They should be laid flat, so as to mallet against their sides, instead of their ends. Much time is saved in using them, as there is more gold in the same bulk than in a twisted pellet. They are cut in some peculiar way, so that their ends are not *condensed*, as when cut by scissors.

They are made of five different numbers. Number ½ is made by rolling up a half sheet of No. 4 gold foil, as small in diameter as No. 17, of the wire guage, and about three times as long.

No. 1 is made, by using in the same way, one whole sheet of No. 4 gold foil.

No. 2, by using in the same manner, two whole sheets, laid together.

No. 3, by using three sheets, laid together.

No. 4, by using four sheets, laid together.

The *diameter* of No. 1, is about 13 of the guage; that of No. 2, about 10 of the guage; that of No. 3, about 9; and No. 4, about 8 of the guage. Their *lengths* vary in the same numbers.

This preparation of gold costs 25 cents more per ½ of an ounce, but as there is a saving in respect of *waste*, it is quite as economical, and, perhaps, more so than gold foil simply. It is put up in small boxes.

There now is quite a puff for these cylinders, but it is not a *paid* puff. I bought and paid for the ones I have used, and I have written this for the benefit of the profession, and not for Mr. Williams, though I heartily thank him for having made and put into market so *convenient* an article.

HYDRATE OF CHLORAL.

By Henry S. Chase.

However valuable this anæsthetic may be in some cases, it seems to me that its reckless use will soon bring it into disrepute, if not into disuse. In England its secret use has become as common as that of opium, and its victories must be ranked in the same class. Instead of the system becoming less sensative to its effects, as is the case with opium, the action of chloral is progressive, and less and less is required to produce fatal effects. I hardly take up a medical or dental journal, but what I read of cases in which small doses of chloral has produced death. Very many deaths have been caused by the use of fifteen to twenty grains.

As many dentists have used this narcotic for the purpose of alleviating pain in the sensative dentine, and recommend the

same to the profession, I wish to caution young practioners in regard to its use. Furthermore, I would advise its entire rejection for the present.

Chloral has caused more deaths in the last two years, than chloroform did in the first ten years of its use. Dr. N. R Smith, of Baltimore, records several cases of prolonged use of chloral which has caused the desquamation of the skin of the fingers, and ulceration about the nails. He thinks it induces a form of toxemia similar to that of ergot.

EPULIS.

By E. C. Chase, D. D. S., Iowa City, Iowa.

Though tumors of the mouth are quite common, yet dentists are seldom consulted in regard to them, and still less frequently called upon to treat them, patients forgetting that a dental practioner is supposed to be able to treat diseases incident to the gums and adjacent soft tissues, as well as those diseases that are confined exclusively to the teeth. At least this has been my experience and observation.

I recently had a case entrusted to my care, which, although it readily yielded to the simplest treatment, may, nevertheless, be of interest to some.

Mr. B., thirty years of age, strong and hearty, sanguine temperament, called, saying he had something growing in his mouth, and wanted advice.

Upon examination I found a tumor situated on the right side of the upper jaw over the molar teeth, about the size of a small hen's egg. His face on that side was somewhat distended, giving the appearance caused by an ulcerating tooth.

By inquiry, I found that this growth was of two years standing. At the beginning of the trouble he had suffered from pain in the first right superior molar, but that soon passed off and he thought no more about it until the tumor became so large as to be a source of annoyance and disfiguration. His teeth and gums were all in the worst possible condition, showing utter disregard on his part to the care of his teeth, and it was owing to this total neglect of cleanliness that he had failed to notice this epulis sooner.

With his consent I proceeded to remove it, cutting close to the alveolar processes, to which I found it firmly united. The attachment was about three-fourths of an inch long, and extended in a line just above the necks of the two first molar teeth.

The tumor proved to be of about the same texture of the gums, quite fibrous, consequently bleeding very little. No ulceration had taken place, as sometimes happens when the growth projects beyond the cutting edge of the tooth, because there had been nothing to iritate it and bring about inflammation and its results.

Fearing that there might be a re-occurrence of the difficulty unless some preventative measures were taken, I resolved to remove, beyond a question of doubt, all cause, and commenced by applying a few drops of strong nitric acid to the bone to which the tumor was attached, and extracting the first molar tooth, which was *dead* and badly decayed and broken away.

I discharged my patient, instructing him to come in again in *two* weeks at any rate, and sooner if he had any trouble. At the end of the allotted time he made his appearance. The gum had completely covered the denuded bone, the cavity left by the removal of the molar tooth was nearly closed, and all traces of the disease had entirely disappeared.

CAREFUL EXAMINATIONS.

By W. E. Driscoll.

While cutting away a cavity of decay, recently, in a manner similar to the system advocated by Dr. Arthur in his new work, on the "Prevention of decay of the teeth," I was more than ever impressed with a sense of our *duty* in making examinations of the teeth; that is, to use the utmost care in our power to detect decay at its very inception, if so presented to us.

I had polished the approximal surface of the adjoining cuspid and examined it with a magnifying glass. Neither myself nor two or three other persons who happened to be watching the operation could see any sign of decay. But noticing that the surfaces of the two teeth would come together too flatly soon after the wedge was withdrawn, I proceeded to bevel off the cuspid so that a narrow edge would rest against the incisor near the labial surface.

It was then that I made the surprising discovery that, although there was no indication of decay on the *polished* surface, for a space corresponding to a No. 4 bur drill, the dentine was not only very much softened, but also somewhat discolored. Having cut down to the bottom of this decay, so as to be imperceptible from a front view, and polished it, it was left in a condition to be easily cleansed, and consequently safe from decay. There can be no doubt, of course, that this decay was caused by a fissure in the enamel, so small as to escape detection.

Although this case may be a better illustration of the value of Dr. Arthur's system, than the necessity of greater than usual care in examinations, I am willing that it should do both, and to that end I have called attention to this circumstance.

ARTERIAL HEMORRHAGE FOLLOWING PUNCTURE OF THE GUM.

By. H. Scott, *in the Dental Register.*

Mr. R. came to my office to-day for some filling. He is a gentleman of thirty years of age, and of sanguine temperament and robust health. After the filling was completed, he asked my attention to a soreness of the gum between the right central incisor and cuspid of the upper jaw. The lateral had been removed a few years before, on account of an abcess at the root, as the dentist had told him, and the gums had been more or less sensitive and swelled ever since.

The absorbtion of the alveolus was perfect; but the margins of the gums in the locality were tumefied, extending more or less about the two adjoining teeth. All the mouth, in every other respect, was entirely healthy, the gums being firm, and all the teeth free from calculus. Without a moment's hesitation, I took up a pointed bistoury, and made one puncture in the gum, near the incisor, when I was surprised to see jets of pure arterial blood thrown out persistently, and in perfect synchronism with the rhythm of the heart. The jets were thrown fully an inch forward, and were so persistent that at least thirty minutes were employed to suppress the hemorrhage, which at last was accomplished by compression. The stream of blood was about equal to a number fifty cotton thread. A curious feature of the

case was, that the artery came down from the palatine arch, which I found by compression on the inside, where the pulsations were quite strong. Nearly a pint of blood was lost before I succeeded in arresting its flow. There had been no unusual bleeding when the tooth was extracted.

LEMAIRE'S CARBOLIZED TOOTH-WASH.—Take of water, 100 parts; essence of spearmint, 50 parts; carbolic acid, 10 parts. Mix. A dessert-spoonful to a quarter tumbler of water.—*Sansom's Antiseptic System.*

TO THE PROFESSION.

I have charge of the Operative and Surgical Departments of this journal, an arrangement made with the issue of this number. I wish to enlist as many writers, to assist me in filling its pages, as possible. To this end I ask the *young* members of the profession to send me items which are of interest to them. Young men, put the facts into as good English as you can; don't write carelessly, if you can help it; but if I should think your papers need a little alteration to make them *presentable*, I will try to do it for you.

Older Practitioners, will you not help us make the journal more interesting by communitations from yourselves? You can find time do so if you wish to. It is hardly fair to make us poor editors do all the writing. Not a penny do we get for our labors. Please send me a paper on some point in operative dentistry.

Direct to HENRY S. CHASE,
No. 1206 Washington Avenue.

Mechanical and Miscellaneous DEPARTMENT.

AN ELEMENT OF SUCCESS.

By W. H. Barker.

Not one of the least important objects to be attained by the general practitioner, is the formation of right impressions on the minds of those who seek his professional services, and the eradicating of erroneous ones by implanting in their places, those which are true and correct. The proper appreciation, and right performance of this duty, as an element of success, few of us appreciate, or regard in its true light, and hence the subject is neglected, proving detrimental to our own interests, and the welfare in many cases, of our patients. How seldom do we take the especial pains, amid the manifold duties and perplexities of our calling, to combat the erroneous ideas that are so often advanced in our hearing. Can we claim that we are doing our best, or flatter ourselves that we merit, or should receive success in its fullest sense? Self-interest, if nothing higher, should ever remind us that we are teachers—which is the true meaning of the word, Doctor, a title we all assume—and the sooner we learn this, and assume the full responsibility that rests upon us as such, the sooner will we enter the advanced ranks, the higher will be our standard, and the greater will be our reward.

In these days of strife and contentions among dental practioners, not as to who shall excel in the profession and attain the highest skill, but as to who shall succeed in getting the greatest number of patients and the greatest amount of work at the lowest rates; alas! for the truth; we do not look for, or expect the millenium of dentistry, but in order that that blessed and much to be hoped for time may the sooner dawn upon us, we are impelled to write these few lines. How easy a matter when operating upon a patient, to let fall the words of instruction and enlightenment, in regard to the proper care of the teeth, facts in regard to their structure, their liability to decay, their peculiar forms and arrangement, and the great caution that should be used to retain them all in as good condition as possible, and what will be the result when the beautiful

arch of pearls formed by nature is broken by the resort to extraction, the value of the simple quill pick, and above all, the necessity of having frequent examinations made, and decayed teeth filled at the very commencement of decay. These and a thousand other things, are all interesting, and often new to our patients, and if given in a spirit of kindness will be thankfully received, not soon forgotten, and frequently acted upon, to the advantage of all parties concerned. We take it for granted that because we are informed on these subjects, that our patients are likewise, and frequently keep silent, when a few words candidly and truly spoken, would doubly reward us, by the gratitude of the patient, and something more substantial. Let us, then, sow broadcast the good seed, striving honestly to do our part, our patients will then do theirs, and we shall reap abundantly.

PELLA, IOWA, January 29, 1872.

TO REMOVE TEETH FROM METALLIC BASES.

BY W. E. DRISCOLL

Don't put them in a ladle to melt the plate off, as is the common practice. It will be more than the teeth are worth to clean the black stain from them.

Hold the plate with a pair of pliers, and with the blow-pipe, direct a jet of flame to the palatine surface, warming the whole piece gradually. Then melt the plate through to the first block or tooth to be removed. When it drops shake the metal from among the pins, and proceed with the rest in like manner. If this is done properly there will not be a stain or flaw on an entire set.

JOURNALISTIC.

The Boston *Medical and Surgical Journal* reports a case of tape-worm in a child five days old. The case occurred in the Long Island hospital, Brooklyn, New York, and as it was carefully studied by competent observers, there can scarcely be a doubt in regard to its correctness. It has been stated by authors

that tape-worm is rarely found in children under one year of age, and "probably never in nurselings." This does not coincide with the generally received doctrine in relation to the cause of tape-worm in men, as it is attributed to the same cause as trichiniasis is, the eating of pork that has not been well cooked. Experiments upon this subject leave but little doubt that this is the common cause of tape-worm, but how that full-grown specimen found its way into the alimentary canal of an infant that had never eaten anything but its mother's milk is difficult to surmise. It is of interest to note that upon administering a decoction of pumpkin seeds to the mother a few days afterwards a large number of segments of tape-worm were expelled.

The *Druggists' Circular* for January reports ten cases of death from taking chloroform, in the last number nineteen cases were reported which happened in November.

The *Dental Cosmos* for January opens with an article by Dr. E. A. Bogue, upon the subject of "Bleaching Teeth when the Discoloration has been produced by Extravasation of Blood," or rather of the coloring matter of the blood within the dentinal tubuli. He states that the iron of the blood, and also, the hæmatin is dissolved by oxalic acid, a saturated solution of which should be placed in the pulp cavity, and retained from three to six minutes, the upper portion of the pulp canal having been previously securely filled so that the acid may not pass through the apex of the fang and injure the tissues in the alveolus. Then recommends filling the entire cavity with oxychloride of zinc, which may subsequently be partially cut out so that a gold filling may be inserted.

Dr. C. E. Francis, in the same number, in an article upon "Drifting," says, "principles which underlie facts are not sufficiently sought, or studied," which embodies a truth which it would be well to keep in mind. He thinks we should be more eclectic in our practice and combine the different modes of practice, and thus arrive at the best results.

Dr. Elliott writes from Yokohama, Japan, upon Japanese dentistry, from which we learn that the insertion of atmospheric plates has been practiced so long there, that the oldest inhabitant does not know when the principle was introduced. The base used is wood, and in the cheaper dentures the teeth are

"merely outlined upon the base," but sometimes they "consist of ivory, sharks teeth, or stone, let into the wood." Impressions are taken in wax, as also are the models, and the plates carved out to fit the mouth. The rank which a dentist occupies in Japan is the same as that of a carpenter, and they are designated tooth-carpenters.

To obtain a correct articulation in cases, where from absorption of the alveolar ridge in the lower jaw, the lower plate is with difficulty kept in place, Dr. E. L. Starr, Philadelphia, recommends the use of steel spiral springs, having a pin attached to each end, to be inserted into the wax upon the trial plates. His manipulations in other respects do not differ materially from those often described in the JOURNAL.

In the transactions of the Odontographical Society, of Pennsylvania, we learn that some of our Eastern brethren have just found out that plaster impressions are better than wax, and some are still in favor of filling fangs with cotton, wool, &c. We can recollect when such things were in vogue in this neighborhood, but if such fillings are now used in this vicinity, those who use them have, at least, been careful not to attempt to defend the practice publicly. It is difficult to convince *patients* even in this city, that cotton is a good material to fill teeth with.

In the report of the Brooklyn Dental Society, we observe that for sensitive dentine, Dr. Brockway recommends the keeping the cavity dry whilst excavating. He does not claim that it destroys all sensitiveness, but that it is much less than when the cavity is kept moist.

His philosophy is good, which supposes that the conducting power of the fibres of the dentinal tubuli are dependent upon a certain degree of moisture, and when that is withdrawn, and the ends of the fibres become dry, they are no longer capable of conducting painful sensations to the nerve centers.

Dr. Atkinson recommended strongly the glycerole of thymole carefully placed in the cavity dry, and sealed in with wax.

In the reported clinic of James E. Garretson, are detailed very interesting cases of neuralgia caused by nodules of dentine in the teeth.

The teeth were broken open after extraction, and the diagnosis proved to be correct. We, however, think this treatment a little

too summary, and have in a few cases succeeded equally well in arresting the neuralgia by killing the pulp, extirpating, and afterwards filling in the ordinary way. It is true that in some cases the pulp chamber, or some portion of the pulp canal, is blocked up by the new formation so that there is some difficulty in filling the fangs, but this is not usually the case, the deposit in most cases being principally confined to the pulp chamber proper, which of course can be removed.

The Chicago *Medical Examiner* comes to us in the shape of a semi-monthly, being so far as we are aware, the only semi-monthly in the West: it is printed upon good paper, and presents a very creditable appearance. From it we learn that in Vienna during the winter Semester of the Academical years of 1870—'71, there were 1,653 medical students, and during the last summer's Semester 1,460, whilst there were 1,468 in attendance upon the London hospital clinics.

The *Pacific Medical and Surgical Journal* says that Dr. Bliss, who it will be remembered was the Principal in the Cundurango speculation, now finds it expedient to resign his position as lecturer in Georgetown Medical College, for the benefit of the college.

In the *American Journal of Dental Science* we find an article from the *British Journal of Medical Science,* which strongly recommends chloral hydrate for tooth-ache. It is to be used by placing a small quantity of the solution in the cavity of any decayed tooth. Of course, a dentist would not think of trying it, except in such cases as are due to irritation of a living nerve.

An article in the Boston *Medical and Surgical Journal* upon the etiology of typhoid fever, furnishes additional evidence that typhoid fever is caused by a poison as definite as that which causes the vaccine disease. In many cases the poison finds its way into the system in the water ordinarily used, but in many more cases, through the medium of the air we breathe.

In the *Register* for December is found a report of a meeting of the First District Dental Society, of New York. Dr. Atkinson read a paper advocating strongly the use of smooth points for filling teeth. Said he "had prayed that he might be the best dentist on the planet."

Dr. Fitch said that he had no doubt that every honest dentist coupled with intelligence, had made the same prayer during his whole life.

Dr. Latimer said "he had prayed that he might be a good dentist, but had never prayed that he might be the best," and plainly indicated that he thought it doubtful whether the Almighty himself would be *able* to grant all of their prayers if each one should pray that he might be the *best* dentist on the planet.

We are glad to see our New York friends so much in earnest in this matter, for assuredly we need the influence of every agency that can be pressed into the service, to push forward the car of dental progress.

The St. Louis *Medical and Surgical Journal* makes its appearance with the beginning of the year as a *monthly*, the editorial supervision having been transferred to Drs. Wm. S. Edgar and H. Z. Gill, and in whose care we wish the *Journal* a prosperous future. This is one of the oldest medical journals in the West, and has always enjoyed an enviable reputation. In the January number, in an extract from the report of the City Chemist and Microscopist to the Board of Health, we learn that the principal adulteration practiced by milkmen is by mixing with water, and that use of drugs for this purpose is comparatively rare. The water-pail, and slop-fed cows together, will have to bear the blame, to a great extent, for the large mortality in young children.

The *L' Art Dentaire* of December has just reached us, and we notice that our friend Preterre, attempts to show that we are in the same category with himself, in that we devote a considerable portion of our pages to the sciences which may be termed collateral. We acknowledge the charge, and likewise admit with the editor of the *L' Art Dentaire*, that it is not easy to fill a journal month after month with articles which relate to dentistry alone, and we are also willing to add, that we do not consider it desirable to do so, but we endeavor to speak out upon all new questions which arise in practice, and we think the readers of the MISSOURI DENTAL JOURNAL are kept advised of everything new and useful, which pertains to the profession.

Now, we have watched the pages of the *L' Art Dentaire* for some years past, and although we have found many interesting

communications upon many collateral subjects, we have never been able to get any definite idea from its pages, of the doings of the profession in France, so far as the daily practice of dentistry is concerned. We have not been informed whether teeth are filled principally with gold, amalgam, oxychloride of zinc, or other material; whether heavy gold foil has been adopted in that country or not; whether pulps are destroyed when exposed or whether they are capped, or what disposition is made of them. If our friends in France have made improvements in any of these directions that we are still ignorant of, we would like to learn of them. So it was with no spirit of fault-finding that we stated that we should like to see *something* about dentistry in the pages of the *L' Art Dentaire*, we do not object to what it does furnish, as we explicitly stated that its selections were good, and we repeat that many of its articles are excellent, and we by no means charge that they are not fitted for a dental journal, but we miss the details that interest the practicing dentist, at the same time we concede that the editor of the *L' Art Dentaire* is doubtless better qualified to mark out a course for his journal, that is adapted to the wants of the French dentist, than any one is who is only cognizant of the wants of the profession in this country.

The present number of the *L' Art Dentaire* has a very interesting article upon abcesses and fistulæ of dental origin, and several others upon subjects which are of interest, among which is one from an Italian journal upon the elasticity of caoutchouc.

The *Buffalo Medical and Surgical Journal* gives us a synopsis of what branches a young man must be examined in before he will be received into a respectable office as a student in Erie County, New York. It is as follows:

The rules of construction of the English language, English Literature, Algebra, Quadratics, Elementary Geometry, Moral Science with Elementary Chemistry, and Natural Philosophy, or to show a diploma from some recognized literary college.

The *Pharmacist* makes its appearance again since the great fire, in new type and better paper than before the great catastrophe. We welcome it once more amongst our exchanges, and predict for it a prosperous future. J.

BIBLIOGRAPHICAL.

TREATMENT AND PREVENTION OF DECAY OF THE TEETH.

By Robert Arthur, M. D. D. D. S.

This work is an octavo of about 250 pages, which has just been issued by J. B. Lippincott & Co., of Philadelphia, and is sold at retail at $1.50. The peculiar views of Professor Arthur are not altogether unknown to the profession, and have from time to time been frequently discussed in the journals, but the general impression in relation to the practice recommended for the prevention of decay, we are satisfied is not altogether correct. The style of the work is such as to fit it for general reading, as well as for the use of the profession. Its principal importance lies in that it recommends a radically different line of practice from that which has hitherto generally prevailed, and one which comes in contact at once with popular and professional prejudices, and doctrines, which, as they have been somewhat chrystalized by time, will not be dissipated until a proportionate amount of force has been expended in the effort. As to the scientific doctrines put forth in relation to the various questions which are treated of, the author makes no claim to exactness, and as the work is intended for the general reader to a considerable extent, these purely theoretical omissions were, to a considerable extent necessary. The bold departure from the routine practice consists to a considerable extent, in the heroic use of the chisel and file for the arrest, and particularly for the prevention of decay in the teeth of children. He attributes decay to a simple decomposition of the tooth substance by the action of acids, and states that though in a perfectly healthy state, the saliva and mucous secretions of the mouth are alkaline, still as we find mouths their fluids are generally more or less acid in their character, and hence arises decay. The decay always commences at points which favor the retention of particles of food, or the secretions of the mouth. Upon these propositions hang the whole philosophy of the proposed plan of treatment.

In relation to the enamel he says, "it is certain that, at the present, it does not furnish any obstacle to the occurrence of decay of the teeth." He instances in support of this proposition, decay constantly occurring upon proximal surfaces when the

enamel is perfect. In relation to the proposition stated above, we must be allowed to dissent, but we are perfectly willing to concede that dentine does not *necessarily* decay when it is not covered by enamel. We are by no means willing to acknowledge, also, that if the nerve be reached by decay in teeth, whose fangs are still in the formative state, that "the loss of the affected teeth, is inevitable."

As soon as the first permanent molar makes its appearance the preventive treatment should be commenced by cutting away the distal surface of the second temporary molar so that the inside surface of the molar may be free. This, the author claims, will preserve the surface for about four years, when the second bicuspid may be expected to replace the second temporary molar. If now, even, it should commence to decay it could be easily recognized and filled. The author argues at considerable length against a practice which has long since been obsolete among nearly all intelligent practioners in the extraction of the first molars for the purpose of making room for the other teeth, &c., and further on he spends some time in showing the impropriety of drilling into the root of a tooth after it has been filled on a dead pulp, or in cases where the pulp has died after the tooth has been filled. In another place he states, that if the pulp is exposed it must be killed and the fangs filled, &c. Now we call attention to these points only for a single purpose, and that is to illustrate one of the simplest propositions of this age, in relation to all progressive movements, which is, that there is no man, however studious or learned he may be, who does not always lose something when he ceases to mingle with, and interchange views with others engaged in similar pursuits

No man who was accustomed to mingle freely with the members of the profession in their conventions and associations, would think now of spending time to refute theories or condemn modes of practice which have been abandoned, as far as intelligent men are concerned, ten or fifteen years ago, and the old fogies who are practicing these old enormities still, will never be benefited by reading Dr. Arthur's book, or indeed, any other book, as they have no time or inclination to *waste* time in any such occupation. To state that the author of this work is a ripe scholar, an earnest, zealous working man in the profession, is but stating what is universally conceded, but that he has lost

sight of the real status of the dental profession, is evident from the fact that he is still combating the errors of earlier days, instead of grappling with the living issues of the present, so far as these questions are involved. But we return to the next feature in the role of preventing decay of the teeth. He says in relation to the incisors, that "It is probable that the incisor teeth of more than nine-tenths of the children of the better classes of people in this country, are attacked by decay on some parts of the surfaces in contact, unless special care is taken with them before they have been formed a single year." We should not have placed the proportion at such a high figure, but in the absence of statistics we should not be justified in making a statement of a different character, as impressions merely upon the subject would be extremely unreliable.

The treatment recommended is to cut away the mesial surfaces of the temporary canines as soon as the incisors are all erupted, and of the lateral temporary incisors as soon as the permanent centrals are erupted. The principle being, in all cases, to cut away the surface of a deciduous tooth as soon as a permanent one is erupted by the side of it, so that the surface of a permanent tooth may never be endangered by the proximity of a temporary one. In all cases the cut surfaces must be thoroughly polished. As far as the cutting of the temporary teeth for this purpose is concerned, few, perhaps, will object; but next comes the case of the incisors when the proximate surfaces are endangered by those of the neighboring teeth. In these cases he recommends cutting away the lingual surfaces of each proximate surface of the central incisor, beveling the section towards the labio proximal angle so that the appearance of the tooth may not be marred. As the canines make their appearance they are to be treated in the same way, whilst the same principle also, is to be carried out in regard to the bicuspids and molars, sapientiæ and all. The practice indicated above, is to be carried out in all cases, so far as cutting away the proximate surfaces of the temporary teeth are concerned, but as regards the permanent, the author states "now let it be clearly understood that this separation of the incisor teeth is not *advised indiscriminately.*" It is, however, to be carried out scrupulously in cases where, from the indications, there will be a probability of decay upon the proximate surfaces,

and when the author states that in his opinion nine-tenths of these teeth decay in a year after they are erupted, we can easily judge of the proportion of mouths in which he would follow this practice. All cavities, except upon proximate surfaces, and these also, if too deep to be treated by cutting away, are recommended to be filled with gold in the usual way.

We have shown the principle involved in this mode of treatment, but of course, we have not reproduced the arguments to support it. The doctrine is developed with great skill, and the subject is approached so gradually, and, unfolded, as it were, by steps so slightly diverging at first from the common line of thought upon these subjects, that one finds himself assenting to nearly all of the doctrines held in the work before he is really aware of the magnitude of his departure. We have no doubt but that the work will modify the practice of the present day to a very considerable extent, and it is especially worthy of the attention of the profession in as much as it discusses in an able manner, many collateral questions with marked ability. We commend it strongly to the profession, though we no not expect that the practice recommended will be wholly adopted, but we do think it will exert a beneficial influence, and lead to more thought and investigation upon the subject of which it principally treats.

J.

WABASH VALLEY DENTAL ASSOCIATION.

The Eighth Annual Meeting of the Wabash Valley Dental Association, will be held at Summit City Hall, corner Harrison and Berry streets, in the City of Fort Wayne, Tuesday, March 19th, 1872.

ORDER OF BUSINESS.

First.—Organization at 10 A. M.

Second.—Calling the roll.

Third.—Report of officers, paying dues, admission of new members, and election of officers for the ensuing year.

DISCUSSION.

First.—Method of changing articulation to normal condition, when the teeth are worn away by attrition.

Second.—Nature and cause of dental caries.
Third.—Treatment of exposed nerves.
Fourth.—Arthur's method of preventing decay of the teeth.
Fifth.—Miscellaneous.

Since our last issue some slight change has been made in the editorial management of the JOURNAL, which it is hoped will increase its usefulness by making it more practical, and consequently more interesting to a majority of its readers. The change referred to is that of placing the control and management of the different departments entirely in the hands of the respective editors. In assuming the responsibility of the *Mechanical and Miscellaneous Department*, we take the opportunity to return our thanks for past favors, and that we may always have something new and interesting to present our readers, we ask their aid and co-operation. Brief notices of new inventions in dentistry, improvements in practice, &c., &c., items of interest to us all, will always be acceptable. Send us short, practical articles, adapted to the wants of those who desire to know the best way out of a difficulty. All may not be able to write scientific articles, but any one who is capable of doing a creditable piece of mechanical work can describe his method of accomplishing it. It is a labor of love we are engaged in, and we hope to receive the aid we ask for. We shall do all that in us lies to make this department interesting and valuable. In our notices of new inventions, discoveries, patents, &c., &c., we shall endeavor to be governed by rigid impartial justice. By personal attention to the investigation of everything new that presents itself, we hope to avoid the error of recommending that which is worthless, or decrying that which has merit.

All communications for the mechanical department should be sent to us, 1224 Washington avenue, St. Louis.

EAMES.

BROOKLYN DENTAL INFIRMARY.

From a circular received, we learn of the organization of a Dental Infirmary by and under the control and direction of the Brooklyn Dental Society. A resident dentist, appointed by the society, is in daily attendance, and one or more of the mem-

bers of the society are present each day for advice and counsel. An opportunity is thus afforded the worthy poor of receiving the services of competent dentists. Treatment of diseases of the mouth, and all operations on the natural teeth, gratis. Artificial teeth are supplied at the following rates :

One to three teeth	$4 00
Three to six teeth	6 00
Full upper or under	8 00

This action of the Brooklyn Society in thus providing for the poor is commendable and worthy of imitation.

KEARSING'S PREPARED GOLD.

We are pleased to notice, as something new, "Kearsing's Prepared Gold." (See advertisement.) We have seen and tried a specimen of this gold, and are much pleased with it. It is prepared in the form of blocks, of different forms and sizes, from the corrugated foil, is very soft and plastic, and when annealed, quite adhesive. The advantage claimed for it over the foil is its convenient form. The blocks being adapted in form and size for the different classes of cavities, no time is lost to the dentist in its preparation. It seems to possess all the advantages claimed for plastic or crystal gold, without being liable to the objection often urged against these preparations, that they break and crumble under the instrument. We have had but little opportunity to test this new candidate for Dental favor. When we have given it further trial, we shall notice it again. E.

THE CUMMINGS' PATENT.

Through the medium of this and other medical journals, the attention of the profession has recently been called to the fact, that a suit is now pending before the Supreme Court of the United States, which will test the validity of the Cummings' Patent. A hearing willl be had some time during the month of March, and if a decision is rendered in our favor, we may hope to be relieved from the oppressive yoke of the Vulcanite Company after May next. The dentists of New York, Philadelphia, and Baltimore, have taken the matter in hand, and are moving to have this case thoroughly tested. In order to secure the co-

operation of the profession generally, and to provide the necessary means, conventions have been held in New York, Philadelphia, and other cities. At these meetings committees have been appointed, and the necessary steps taken to thoroughly and quickly canvas these sections for aid. At the Convention held in Philadelphia, February 27th, Missouri was represented by Dr. N. R. Morrison, as delegated from St. Louis. From a report just received from Dr. Morrison, we gather the following facts: The suit in question was taken to the Supreme Court in 1870 by some one, and stands on the docket as a test case selected by the dentists, but the dentists only found it out about two months since. They are now forced to accept it and are going to make as strong a defence as possible. They have employed as counsel Mr. Foster, of New York, and Orville Horwitz, of Baltimore, who having thoroughly investigated the case, give it as their opinion, that it is a good one for the dentists. The committee, who know the men personally, have every confidence in their ability and integrity.

A committee, consisting of nine tustworthy men, were appointed to canvas the State of Pennsylvania and to collect funds and answer the calls of the head center, Dr. Hunt, of Washington City. It is expected that every State will do likewise, thus making it a noticeable affair. Dr. Morrison pledged the aid of Missouri, and we presume that a call will at once be made for a Convention, to be held in St. Louis, to act in this matter. Whatever is done must be done quickly, and we trust no one will fail to respond when called upon to contribute. The interest of each individual member of the profession is involved in this suit. If we suffer it to be lost we must submit to the extortionate demands of the Vulcanite Company for the next ten years. If we gain it we are free. The stake is worth trying for. E.

WITH the present number of the *Journal* there will be found the first number of THE DENTAL MIRROR, which, while it may not be an average specimen of what the Society hopes, and expects it to be, yet it will seem to indicate the general plan of furnishing the *public* with useful information respecting their teeth, how to save them, &c. *Will* each subscriber to the *Journal* not aid this cause by at least taking *one copy* for a year, and writing *one* article—more will *be acceptable*—for its pages? Consider this a personal invitation *to* do *so*, and send it to 1201 Washington avenue, St. Louis.

The delay in issuing the present number of the JOURNAL is due to the change which has been made in the publishers. Hereafter the JOURNAL will be mailed to our subscribers on or before the 15th of each month.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] MARCH, 1872. [No. 3.

VALEDICTORY ADDRESS BEFORE THE GRADUATES OF NEW YORK COLLEGE OF DENTISTRY, STEINWAY HALL, N. Y. MARCH 4, 1872.

BY J. L. DAVENPORT.

MR. PRESIDENT.—GENTLEMEN OF THE FACULTY AND BOARD OF TRUSTEES, COLLEGEMATES, LADIES AND GENTLEMEN:—Education as defined by Webster, comprehends all that series of instruction and discipline, which is intended to enlighten the understanding, correct the temper, form the manners and habits of youth, and fit them for usefulness in their future station. Although this definition is far from elegant, concise, or exhaustive, still it suffices to show that education has reference to something more than accumulation of knowledge.

In every department of life, the true man lives, and acts as well for the human race in general as he does for himself. But this seemingly self denial for others, is, perhaps, the true cause of his own advancement.

This is an age of progress, and of important scientific discoveries, an age of illumination and great events, it lays manly hold on things now that were once only dreamed of. There are those who affirm that there is no progress, and who no doubt *really* think the world revolving backward. It was my pleasure a few years since to listen to Mr. Wendell Phillips' famous discourse upon the Lost Arts, and while I was delighted with the erudition and elequence of the distinguished gentleman,I was surprised to find how *few* and unimportant were those Arts

which had been lost, compared with those which in later days have been discovered.

It is also true that everything among men has had a beginning. The electric telegraph which now encircles the world owes its origin to the kite of Franklin—made of two sticks and a silk handkerchief; Watt made his first model of the condensing steam engine out of an old syringe; Rittenhouse, the astronomer, first calculated eclipses on his plow-handle, and the celebrated Benj. West, it is said, made his first brushes out of the hair of a cat's tail. It might be difficult, if desirable, to point you to the first man who conceived the idea, which has resulted in the profession for whose advancement we are gathered here to-night, to tell where he was born, what laurels he won, or where he died; yet it would be most reasonable to suppose that the practice of examining the teeth which had become the seat of a mysterious and anomalous pain, and the endeavors to comfort them must have originated in some urgent want, and I have no doubt that this strange phenomenon must have been regarded as a sore affliction, and might have been supposed to have had its origin with the Devil. Hippocrates, who wrote three hundred and fifty years before Christ, makes mention of the teeth and their diseases. Herodotus, the Greek historian, speaks of the diseases of the teeth, and of a class of men who treated them as a specialty. Galen, who lived in the second century, wrote the best account of the teeth that had yet appeared. Celsus, in his writings, gave particular directions for extracting, which was to shake the tooth well in the jaw and then remove it; an operation which must have been exceedingly agreeable to the patient. But I intended giving no history of our profession, and will therefore, content myself with bidding our old associates a simple heart-felt good-bye—God be with you. That's the English of "Valedicere," and that's the *text* of my *commission.*

Gentlemen of the Faculty, and Board of Trustees, we take our leave of you with sentiments of profound respect and gratitude. We thank you for our pleasant college, gentlemanly "Factotum," the best of janitors, and *especially* for our diplomas. It comes hard to bid you farewell. Your precious autographs have just been placed in our hands. We have your photographs packed safely away in our trunks, our note books are filled up, inter-

lined, crosslined, with golden precepts, which we have eagerly caught as they fell from your lips. We will remember with gratitude, every earnest effort, every encouraging word, which has helped us in our difficult and laborious career of study. The names we read upon our diplomas, will recall faces that are like familiar portraits in our memory, and the echo of voices we listened to so long, will linger in our memories far into the still evening of our lives. We take our leave of you with regret, and hold in tender remembrance those who have taken us by the hand at the entrance of our chosen path, and led us patiently and faithfully, until the great gates have swung upon their hinges and the world lies open before us.

Classmates of '72, the great consummation has at length arrived. Side by side we have struggled on to this goal, which *already* we discover to be only a new starting point for a yet more trying race. We now begin to see as "*through a glass darkly,*" the reasons why our brains have been perplexed with the theories of Schwann, Virchow, and Beale, and also why our visual organs have been strained to detect between Hyolin and Fibro-cartilage, under the microscope. Who of us will ever forget the shock to our olfactory from sulphuretted hydrogen, until it became necessary to call up *Peter* to give us ventilation. The time may come when we shall understand why we were never urged to grasp with avidity the zygomatic and styloid process, and mount the rostrum between the great wings of the Sphenoid and trace the windings of the Trifacial or Trigemini; or why we were like Lot, of old, admonished not to look behind us, nor tarry upon the "*plains*" at the base of "*Crista Galli,*" but to push steadily forward until we had mastered the origin and insertion of the *Calcaneo Cuboid,* or the *Flexor ossis metda carpi minimi digiti.*

The records of the present term are soon to be veiled in the past. Its joys, its anxieties, its toils, its moments well spent, and its moments wasted—*all* that it has been to us of intellectual wealth, or of practical growth, are soon to become facts in positive history.

And now after months of pleasant association during which we have studied and labored together, we are to say a few farewell words and separate, each to pursue his own way, and engage

in the practice of his chosen profession. It is here we have endeavored to obtain that knowledge which shall be to us strength—that will enable us better to perform the duties of our calling—giving us a new impetus, that our influence may become greater, our usefulness enlarged, and our profession more honored among men. And pleased as we may be to dissolve our connection with these halls of learning under circumstances so flattering, we are, nevertheless, admonished of the difficulties of meeting the expectations it may excite, and we only dwell upon the occasion because it is associated with some of the freshest hours of our existence, some of the warmest and pleasantest of our recollections, with the remembrance of ties whose moral unity is yet unbroken, and friendships whose light shines on unextinguished, though o'ershadowed by the raven darkness of the wing of time.

ACTION OF HEAT ON PROTOPLASMIC LIFE

By F. Grace-Calvert, F. R. S.

Those investigators of germ-life who favor the theory of spontaneous generation have assumed that a temperature of 212° Fahr., or the boiling point of the fluid which they experimented upon, was sufficient to destroy all protoplasmic life, and that the life they subsequently observed in these fluids was developed from non-living matter.

I therefore made several series of experiments, in the hope that they might throw some light on the subject.

The first series was made with a sugar solution, the second, with an infusion of hay, the third with solution of gelatine, and the fourth with water that had been in contact with putrid meat. The hay and putrid meat solutions were taken because they had often been used by other investigators; sugar was employed, being a well-defined organic compound free from nitrogen, which can easily be obtained in a state of purity; the gelatine was used as a nitrogenized body which can be obtained and is not coagulated by heat.

To carry out the experiments I prepared a series of small tubes made of very thick and well annealed glass, each tube about four centimetres in length, and having a bore of four mil-

limetres. The fluid to be operated upon was introduced into them, and left exposed to the atmosphere for sufficient length of time for germ-life to be largely developed. Each tube was then hermetically sealed and wrapped in wire gauze, to prevent any accident to the operator in case of the bursting of any of the tubes. They were then placed in an oil-bath, and gradually heated to the required temperature, at which they were maintained for half an hour.

Sugar Solution.—A solution of sugar was prepared by dissolving 1 part of sugar in 10 parts of water. This solution was made with common water, and was exposed all night to the atmosphere, so that life might impregnate it. The fluid was prepared on the 1st of November, 1870, introduced into tubes on the 2d, and allowed to remain five days. On the 7th of November twelve tubes were kept without being heated, twelve were heated to 200° F., twelve to 300° F., and twelve to 400° F.

The contents of the tubes were microscopically examined on the first of December, twenty-four days after heating.

Sugar Solution not Heated.—There were about 30 animalcules under each field of the microscope, principally *small black vibrios*, two or three microzymes swimming slowly about, three or four *ordinary swimming vibrios*, and a few bacteria.

Heated for half an hour at 212° *F.*—A great portion of the life had disappeared, no animalcules were swimming; still this temperature had not completely destroyed life; 4 or 5 *small black vibrios* were observed moving energetically to and fro; 2 or 3 *ordinary vibrios* were also observed moving energetically in the same position of the field, that is, without swimming about.

Heated for half an hour at 300° *F.*—The sugar was slightly charred, but the life was not entirely destroyed, as 1 or 2 *ordinary vibrios* and 1 or 2 *small black vibrios* were observed in motion under the field of the microscope.

Heated for half an hour at 400° *F.*—The sugar was almost entirely decomposed: no trace of life was observed.

Heated for half an hour at 500° *F.*—No life observed.

Remarks.—The black vibrios here referred to are far more opaque than the other varieties of vibrios, and are the most important of all, as I have found them to resist not only very high temperatures, but all chemical solutions. I shall, in my

paper on putrefaction and the action of antiseptics, describe the various vibrios and give drawings of them.

Hay Infusion.—An infusion of hay was made by macerating it in common water for one hour, then filtering the liquor, and leaving it exposed to the atmosphere all night, when it was sealed in the small tubes, twelve of which were used for each experiment. The infusion was made on the 4th of November, sealed in tubes on the 5th, and heated on the 7th.

The results were examined on the 1st of December, 1870, twenty-four days after being heated.

Hay Infusion not heated.—Fungous matter was observed growing on the surface of the fluids in two of the tubes. On subjecting the contents of some of the tubes to examination, from 20 to 25 animalcules were observed under each field of the microscope. This kind of life resembled small dots moving energetically to and fro; 1 or 2 ordinary vibrios were also present.

Heated for half an hour at 212° *F.*—No fungous matter was noticed on the surface in any of the tubes. A few small black vibrios present in the original solution were also present in this.

Heated for half an hour at 300° *F.*—No fungous matter present, but some of the small black vibrios were still present, although in less numbers.

Heated for half an hour at 400° *F.*—No fungous matter observed. The fluid was filled with irregular masses of coagulated matter, and life had disappeared.

Heated for half an hour at 500° *F.*—No life present.

Gelatine Solution.—A solution of gelatine, prepared of such strength that it remained liquid on cooling, was exposed for twenty-four hours to the atmosphere. It was then introduced into the small tubes, and the tubes sealed. The solution was made on the 4th of November, the tubes sealed on the 5th, and subjected to the different temperatures on the 7th.

The fluids were examined on the 1st of December, 1870, twenty-four days after being heated.

Gelatine Solution not Heated.—There were seven or eight animalcules under each field, five or six of which were quite different to anything observed in the other fluids. They had long, thin bodies, swimming with a peristaltic motion. One or two ordi-

nary swimming vibrios were also present; but the small black vibrios were absent.

Gelatine Solution Heated for half an hour at 100° *F.*—Life seemed to have only slightly decreased, and none of the animalcules were swimming. The peculiar animalcule mentioned in the previous paragraph appeared to retain still its peristaltic motion, but not sufficient power to move across the field; a few ordinary vibrios being also observed moving to and fro.

Heated for half an hour at 212° *F.*—A very decided diminution in the quantity of life present was noticeable.

Heated for half an hour at 300° *F.*—No life present.

Heated for half an hour at 400° *F.*—No life present.

Putrid Meat Fluid.—Water was placed in an open vessel, and a piece of meat suspended in it until it became putrid and contaminated with myriads of animalcules. This fluid was placed in the usual tubes, which were sealed on the 7th of November, and heated on the same day.

The contents of the tubes were subjected to examination on the 1st of December, or twenty-four days after having been heated.

Not heated.—A large quantity of life was present, namely, microzyma and several distinct species of vibrios, among which were a number of the small black ones frequently mentioned.

Heated for half an hour at 100° *F.*—This temperature had but slightly affected the life present, the animalcules being as numerous as in the liquid not heated, and moving as usual. However, one species of very long vibrios appeared to be considerably affected, as they were much more languid in their movements.

Heated for half an hour at 212° *F.*—This liquor differed from all the others in being turbid and coagulated. Life was still present; and although heat had deprived the animalcules of the power of locomotion, still they retained a sufficient amount of vital force to place it beyond a doubt that life was not destroyed.

Heated for half an hour at 300° *F.*—The liquid was quite clear, the albumen (which is congealed at 200°) appearing to be redissolved. A large quantity of the life in the fluid was destroyed, but some vibrios still remained, the small black ones being the most numerous.

Heated for half an hour at 400° *F.*—All life had disappeared.

Heated for half an hour at 500° *F.*—All life had disappeared.

The results recorded above show that protoplasmic life is but slightly affected by a temperature of 212° F., and that, even at a temperature of 300° F., it is not entirely destroyed, excepting in the case of gelatine. In all the other fluids a temperature of 400° F., is necessary to completely destroy the life. These experiments, therefore, clearly show that the life found by previous experiments in fluids which have been submitted to heat was not due to heterogenesis, but to life which had remained in the fluids, as I have seen no such experiment reported where the temperature to which the fluids were exposed exceeded 300° F.*

I am the more justified in making this statement, as I have repeatedly examined the contents of tubes which had been submitted to a temperature of 400° F., both immediately after cooling and at all periods up to thirty days, and was unable in any instance to detect the slightest trace of life.

This important result corroborates those recorded in my previous paper, and proves that the spontaneous generation theory is not yet by any means established.

It occurred to me that it might be interesting to examine the influence on pure albumen of the putrid meat fluids that had been heated, and note whether they still possessed the property of propagating life. A solution was prepared by mixing the albumen of a new-laid egg with pure distilled water free from life, (prepared as described in another paper). Equal volumes of this solution were placed in six small test tubes, which had been cleaned with hot vitriol and well washed with pure water. To one tube two drops were added of the putrid meat solution that had been heated to 100° F., to a second, two drops of that heated to 212° F., to a third, two drops of that heated to 300° F., to a fourth, an equal bulk of fluid heated to 400° F., and to a fifth, the same quantity heated to 500° F. In the sixth, the albuminous solution, without anything added, was kept for comparison.

The tubes were sealed and kept from the 1st of February to the 9th.

* It is with pleasure that I find these experiments to confirm the suggestion of Dr. Beale, in his work entitled "Disease-Germs, their supposed Origin," p. 50, (which I read a few weeks ago), that "living forms might live though exposed, under certain conditions, to a temperature of 350° F."

RESULTS OF EXAMINATION.

Albumen Solution.—In each drop two or three small black vibrios moving to and fro.

Albumen Solution, with Putrid Meat Liquor, heated to 100° *F.*—Abundance of life.

Albumen Solution, with Putrid Meat Liquor, heated to 212° *F.*—Abundance of life.

Albumen Solution, with Putrid Meat Liquor, heated to 300° *F.*—Much less life than in the two fluids previously examined.

Albumen Solution, with Putrid Meat Liquor, heated to 400° *F.*—In each drop two or three small black vibrios, moving to and fro.

Albumen Solution, with Putrid Meat Liquor, heated to 500° *F.*—In each drop two or three small black vibrios, moving to and fro.

These results clearly show that, at the temperatures of 100°, 212°, and 300° F., life and its germs had not been destroyed, whilst at 400° F. they had; for the results of the examination were in this case exactly identical with those of the albumen solution itself; and the life found was introduced in the preparation of the solution, and was not due to any life having remained in the fluids that had been heated.

Although perfectly aware of the interesting researches of Professor Melsens, proving that the most intense cold does not destroy the power of vaccine lymph, still I thought it desirable to ascertain the effect of a temperature of 15° F. on well-developed germ-life, similar to that which had been subjected to the action of heat.

Some putrid meat liquor, therefore, containing a large quantity of microzyma and vibrios, was subjected for twenty-four hours to the influence of a temperature ranging between the freezing-point of water and 17° below that point, when the ice was melted and the liquor examined. The animalcules retained their vitality, but appeared very languid, and their power of locomotion was greatly decreased.

Two hours after melting the ice, the liquor was again examined, when the animalcules appeared as energetic as before.

[*From the Boston Medical and Surgical Journal*]

DIAGNOSIS OF SYPHILIS BY THE MICROSCOPIC EXAMINATION OF THE BLOOD.

VIENNA, January 12, 1872.

MESSRS. EDITORS:—I have just returned from a meeting of the "Gesellschaft der Aerzte," at which was announced a discovery of the most stupendous importance. I am eager to be the first to herald to the New World, through your pages, the greatest success—I may venture to say—as yet achieved by the microscope, to-wit, the certain diagnosis of syphilis. I will give briefly, from memory, the course of procedure which led to this grand result, having first recorded the name of the propounder of the new theory as Dr. Lostorfer. Wishing to make a series of examinations of blood from syphilitic patients, Dr. L. applied to Dr. Zeissl, in August last, who at once placed his wards at the service of the investigator. The manner of conducting the researches consisted in taking a drop of blood, placing it immediately between a slide and covering glass, then setting the specimen under cover. A large number of slides were thus prepared, and daily examined microscopically with a No. 10 immersion lens, Hartnack. The first two days nothing abnormal presented itself; but, on the third, minute shining bodies were discerned, which grew from day to day, until they attained the size of red blood-corpuscles. The shape was, in most instances, round, but modifications of that form were here and there noticed; they were all, however, provided with tapering processes or "sprouts." The number of these corpuscles to be seen at one time within the field of the microscope was variable, amounting in only one specimen to fifty. A month later these objects were still visible. A solution of sugar, as well as several other solutions, caused them to shrivel up, become, as it were, folded upon themselves, lose their shining aspect, and cease to grow. Cold was also found to affect their development, inasmuch as a temperature below 10° Reaumur (54° Fahr.) put a stop to all growth.

To prove the connection between these bodies and syphilis, very many experiments were made with healthy and diseased blood, and the diagnosis confirmed beyond the possibility of doubt.

Blood was then daily examined while the patients were under treatment with mercury (einreibungen), and, after a certain

time (in one case twenty-five days), during which the number of corpuscles was steadily decreasing, they had wholly vanished from the field. After these experiments, Dr. Lostorfer submitted himself to Prof. Striker and later to Prof. Hebra to have his power of diagnosticating syphilis, by the microscopic appearances of the blood, put to the test. On various occasions he received from them numbered slides with blood of syphilitic and non-syphilitic individuals. To their astonishment, he unerringly selected from the preparations those where the blood was tainted with syphilis, with the exception that on certain slides the blood was pronounced to be in a condition allowing of no conclusion being arrived at.

The discoverer gives the name of syphilitic corpuscles to these bodies, which, he said, must originate in one or two ways—either from germs always present in the blood, but stimulated to growth by the syphilitic virus alone, or from such introduced bodily into the blood at the time of infection.

In conclusion, he read the records of a number of cases with his microscopic observations of the blood from day to day. As Dr. Lostofer ceased speaking, a burst of genuine enthusiasm escaped from the assembled physicians, while Prof. Skoda rose to greet the hero of the evening, as the proclaimer of what was destined to prove one of the most important discoveries of the age. He regretted that it was not customary in Austria to give medals or other rewards of merit in such cases, stating that, had this statement been made in Paris, he would have been crowned, as he deserved.

Prof. Stricker detailed the precautions taken to avoid error or deception in each of the trials to which Dr. L. was subjected. The latter's selection of diseased blood was always correct, and decided, except in the few ruined specimens. To ensure the purity of the healthy blood, he had taken his own and that of his servant. After awhile, Dr. L. distinguished between these two, inasmuch as the Professor's was thicker and "dirtier."

Prof. Hebra confirmed all that had gone before, and said he had been so much struck with the discovery, that Prof. Stricker's blood "contained more filth (schweinerei) than that of any other living man," that he had instituted researches for similar peculiarities among his patients, but, thus far, without result. No

words are needed to show the immense field for research, thus suddenly thrown open to investigators, nor can the practical results likely to proceed from this study be over-estimated. Microscopes all over the world will now be turned toward these new constellations, and their every freak recorded.

Theories of unity and quality will soon cease to vex the earnest student and practitioner, and half the skill and learning of dermatologists is made of no value by this simple and certain indication of the presence of the syphilitic virus. The testimeny of two such renowned and incredulous men as Professors Stricker and Hebra is a convincing proof that these corpuscles are not bubbles to be pricked by the next impertinent microscopist. I trust I have not omitted nor misstated any of the main points of Dr. Lostorfer's paper, but if so, will send you in expiation of my offence a copy of his article, as soon as printed.

I am yours, &c.,

JAMES R. CHADWICK, M. D.

Operative and Surgical Department.

CAPPING EXPOSED PULPS.

BY A. H. FULLER, M. D., D. D. S.

The "capping" of exposed pulps has been practiced to some extent for the past thirty or thirty-five years, but was not generally adopted by the profession until within the last eight or ten, and during the latter half of this period only, has it been the rule and not the exception to try and preserve the vitality of the pulp in cases of exposure, whether caused from accident in excavating or as the result of caries.

"Harris," in speaking of this subject, says he has practiced "capping" since 1846, and in giving his experience, reports only one case in *every* fifteen a failure during the ten years previous to 1862.

He does not go into a description of the cases treated, and judging from the date, &c., we must conclude they were what would at present be termed favorable; he states at this time his

belief that where treatment is better understood a much larger proportion of cases will prove favorable.

In "Tomes," we find it laid down as a rule to be followed, that when a pulp is exposed in excavating a cavity, it should be capped and preserved alive, and under *other* circumstances we are justified in trying to cover an exposed pulp, if we are satisfied that it is free from disease, but he informs us almost in the same paragraph that instances of this kind are very rare.

The practice at present, as you are all well aware, is to try and preserve the pulp alive under almost all circumstances.

In doing this, failures are occasionally met with, but thousands of teeth are annually saved alive and healthy, which under former modes of treatment would have been deprived of most of their vitality, if they had not been summarily transferred from the mouth to the spittoon.

Since the attempt was first made to preserve the vitality of a tooth by capping the exposed pulp, various methods have been tried and means adopted, all with more or less success.

The first method of procedure was as follows: Having cleaned out the cavity and shaped it as desired, if the pulp bled, to cauterize it with a hot wire, then to introduce a piece of shot lead of sufficient size to cover the exposed portion of the pulp, after which to fill with gold or other material, as may have been before determined.

Lead was suggested because it was said to have a cooling effect, which served to subdue any tendency to inflammation that might occur, and also, because it could readily be shaped to any desired form. The idea as to the beneficial effects of the lead as a capping was soon abandoned, and as gold was free from the objectionable properties of lead in its tendency to oxydize, &c., a cap made of gold plate was next in favor; this was made to nicely fit over the exposed point and rest in the surrounding dentine, and retained there while the filling was being introduced. This practice was found to be objectionable from the difficulty experienced in retaining the plate in place, which, in many cases, was found to be impossible, and was abandoned for the more practical operation of "building over," as it was termed.

This operation consisted in arranging the pellets or cylinders, of gold or tinfoil, so as to leave a space between the point

exposed and the filling, thus pressure was avoided, and the pulp in a manner, protected from thermal changes.

Other methods were practiced and other materials used, such as horn, quill, &c., but objections to their use were soon discovered, and material objections made to the direct application of a metal cap over the exposed pulp, on account of the irritation and pain, caused by the conducting properties of the metals, which in many cases, extended to inflammation and death of the pulp.

To guard against the irritation thus caused, it was found necessary to interpose some non-conducting substance between the filling and the pulp. Hill's stopping was used for this purpose in some cases, while in others, especially when an amalgam filling was to be introduced, a pellet of cotton saturated with kreosote, or a small quantity of asbestos was placed over the exposed pulp, and the results were generally satisfactory.

I have removed several amalgam fillings to replace them with gold, where asbestos had been used as a capping, and in every instance, found the tooth perfectly healthy, and a deposit of secondary dentine interposed between the cap and the pulp of the tooth.

At present the oxychloride of zinc is more frequently used as a capping than any other substance, and the success attending its use has been a source of gratification to the whole dental profession.

The manner of procedure until quite lately, in cases of exposure from caries, was to treat the pulp by the application of remedies such as kreosote, carbolic acid, glycero-thymol, &c., until all inflammation was subdued, then to introduce a temporary filling of the oxychloride of zinc, which was allowed to remain for some time as a last. If no trouble was experienced after a sufficient time had elapsed, a portion of the temporary filling was removed and a gold or other filling inserted. In cases of exposure from accident it has always been the practice to cap and fill immediately. This practice of putting in a temporary filling has gradually lost favor, and now it seems to be the general impression that the permanent plug should always be introduced before the oxychloride of zinc capping has been allowed to come in contact with the secretions of the mouth, and the

arguments used to sustain this practice seem rather plausible.

It is contended that animal matter is absorbed by the temporary filling, which may itself be the cause of future trouble; that this material is not a good test; that gases may pass through it from a dead pulp and cause no trouble to the patient, and this being the case we are able to introduce a permanent filling over a dead pulp, which will be almost certain to give trouble afterwards, and, also, that the renewal of a temporary, to give place to a permanent filling, while the pulp is, as it were, in a pathological condition, may of itself be the cause of death.

Taking all things into consideration, I am of the opinion that, when a tooth is in a proper condition for filling, we should cap and fill permanently at the same sitting; that only so much of the cavity as is necessary for the solidity and proper retention of the metalic plug, should remain exterior to the capping, thereby avoiding the ill effects of the consolidating of a large amount of gold, and in a measure, protecting the pulp from thermal changes.

[*From the Chicago Medical Examiner.*]

LIQUID NITROUS OXIDE AS AN ANÆSTHETIC.

By Edmund Andrews, M. D.—*Professor of Surgery in Chicago Medical College.*

Many months ago I made experiments on the use of nitrous oxide pure, and nitrous oxide mixed with oxygen, with the view of adapting them to the purposes of anæsthesia in general surgery. These experiments, which were published in *The Examiner*, showed that there were several difficulties in the way of using, for prolonged operations, the ordinary gas of the dentists—one of which was that the gas never makes the least approach to purity, containing always from 10 to 25 per cent. of free nitrogen and oxygen. As it is almost impossible to separate the free nitrogen without an apparatus for reducing the gas to a liquid form, I suspended the experiments until this deficiency could be supplied.

Three weeks ago I received from Johnston Brothers' Dental Depot, 812 Broadway, New York, an apparatus and a supply of liquid nitrous oxide equal to 100 gallons of gas. It is well known

that under a pressure of about 750 pounds to the square inch nitrous oxide condenses to a liquid, while the free nitrogen and oxygen, contained as impurities in it, remain in the gaseous form in the top of the receiver, hence the condensation serves as a means of separating the oxide from the other gases. The liquid was contained in a strong iron flask about four inches wide and twelve inches long. When it is desired to use the anæsthetic a faucet is turned slightly, allowing the gas to escape into a rubber tube leading to a small sack; and thence to an ordinary inhaler, so contrived, with valves, that the inspirations are drawn from the sack and the expirations pass into the open air. When not in use the whole is packed in a neat case about five inches square and fourteen inches long, with a handle on one side for carrying it, and weighs, perhaps, twelve pounds. The contents of one flask will last long enough for about three surgical operations of moderate length. The intention is to have the flasks kept ready filled at drug stores and dental depots, where the surgeon can return his empty flasks and procure filled ones.

The apparatus being new to myself and assistants, it is probable that we did not obtain the best possible results from it, but the following cases illustrate the effects.

Case 1. Five fingers to be amputated for frost bite, followed by mortification. The patient came under the influence slowly and with difficulty. At length his consciousness seemed to be gone, and his countenance presented the blue asphyxiated look characteristic of full anæsthesia by nitrous oxide, nevertheless he writhed and struggled during a large part of the operation, and afterwards complained that he felt every cut. The result was decidedly unsatisfactory.

Case 2. This was mortification of a single finger requiring amputation. The patient was given the gas more freely, by turning on a more copious stream from the flask. He was anæsthetized in about forty seconds, and went through the operation without any consciousness of pain.

Case 3. This was an operation upon varicose veins in the leg. The patient went under the influence of the anæsthetic in thirty-five seconds, obtaining a complete insensibility. In this state I injected the veins of the leg in about ten places with tincture of iron, without causing any pain.

CASE 4. The inhalation commenced, but the supply of gas gave out, and the anæsthesia was completed with ether.

It is stated that the operation of ovariotomy has been performed under the successful influence of this anæsthetic in New York.

The present state of knowledge on the subject, derived largely from my own investigations, may be summed up in the following propositions:

1. Nitrous oxide is the safest anæsthetic known. In a laborious collection of statistics which I made, embracing over 200,000 cases, I showed that the mortality of these articles was nearly as follows:

Chloroform, one death in 23,204 cases; mixed chloroform and ether, one death in 5,588; bichloride of methylene, one death in about 7,000; nitrous oxide, no death in 75,000. (*Chicago Medical Examiner*, 1870.)

2. Nitrous oxide anæsthetizes the patient in about forty seconds, while the other articles require from five to twenty minutes. The patient also awakes quickly, and does not suffer from nausea afterwards.

3. The liquefaction of the gas renders it portable, so that it can now be easily carried to the patients' houses.

4. The expense, after the manufacture and sale are well established, will probably be less than that of ether.

5. Nitrous oxide always produces a purplish flush of the face, indicating partial asphyxia though without any sense of dyspnœa, hence it cannot, in prolonged operations, be given continuously, but must be alternated with short intervals of breathing atmospheric air, renewing the inhalation of the gas as often as the duskiness of the countenance subsides.

6. It is not certain yet that all patients can be kept steadily asleep in this manner. Some of them seem to arouse after the first short sleep, and cannot be again fully quieted, even if the gas be pushed to the production of a decided flush of asphyxia in the countenance. Perhaps further experiments will remove this difficulty.

7. Nitrous oxide, in the gaseous form, may be mixed with one-fourth its bulk of free oxygen, and then does not asphyxiate.

In my experiments on this subject I kept one patient nine minutes breathing the mixture, but the anæsthesia was less profound than was desiaable.

8. If the patient be kept absolutely on pure nitrous oxide alone, he will die by asphyxia in spite of the general safety of the article, as it is incapable of oxidating the blood. The assistant administering it must pay attention to this matter, and give atmospheric air as required. I placed a rat in nitrous oxide gas from a dentist's gasometer, and the animal died in ten minutes, while another rat placed in a jar of the gas mixed with pure oxygen, remained in it half an hour and was taken out alive

9. Although it is not yet certain that the nitrous oxide can be made generally available for long operations, it is already for all short ones the most convenient, safe and pleasant anæsthetic known.

No. 6 Sixteenth St., Chicago. January 10, 1872.

CASE IN PRACTICE.

Ten days since I removed a compound filling from the tooth of a female, aged 35. Temperament billious and sanguine. Situation of cavity in the right proximal portion of left superior central.

Removal became necessary owing to extreme sensation following with peridental inflammation. According to Ledger I filled this tooth on the 28th of Sept. 1871. Although a good degree of sensation manifested itself at the time of the insertion of this filling, yet not sufficient to demand treatment.

For several weeks the case proved highly satisfactory, but subsequently became affected by thermal influences, intensifying to such a degree, as to render the organ almost useless in the act of biting. Upon removal of the filling, found the walls of the cavity quite sensitive, thus indicating the life of the nerve. Not feeling inclined to yield to the desires of any patient—that of extraction, or devitization—I simply depleted the gum around the tooth and applied to the cavity a pledget of cotton moistened in a solution of chloroform and gutta percha, and as soon as the soreness of the tooth subsided, which was two days afterward, I filled the cavity with Osteo Plastic; shall allow that

filling to remain from four to six weeks, when if all indications prove favorable, will refill with gold. I look for no farther complaint, however; we shall see, and if otherwise, record.

CHILLICOTHE, Mo., Feb. 16, 1872. BREWER.

MORE LIGHT NEEDED.

Here comes Mrs. ———, a thin, small woman, with a trifle of the "spinal difficulty;" has suffered for two weeks "with neuralgia" on left side of face and head. She possesses that well-known ability to see every change of instrument, each move you make, and starts readily if even a mouth mirror alone is used, and demands to know the cause of this trouble before you look. Well, then, with Rip Van W., "we won't count that," and will proceed to examine this side of the mouth which seems to disclose no decay, no old roots, and of the remaining teeth all are intact save the first left inferior molar which was filled in 1861, with amalgam. This is a very little sensitive to concussion. About three weeks since some teeth on the right were also filled with amalgam, after which, two were quite painful for a short time. Patient demands the cause of the "Neuralgia." Husband asked—which query was also revolving in our own minds—if the cause of the pain on the right could shift so as to be felt on the left.

Now, we filled this tooth in 1861, and none of the others, and we could not discover by patient that it had ever troubled her, and we were loth to discover our "old chicken had come home to roost," but by dint of a kind of crawfish reasoning—the merest guessing—and the apparent lamentable confidence of patient in our counsel, we decided this same molar of ours must be removed, though the molar was good and it was scarcely sore at all. Pulp dead, or not dead, that was the question then. We examined this privately but soon were willing to disclose the wisdom of our profound decision. That pulp was ossified, and the patient relieved. The ossification was confined to main chamber. The remaining parts of the pulp seemed congested, but otherwise, normal. We believe there was slight periostitis.

Now, Mr. Editor, though closely pressed for intelligent decision in this case, we actually did not know that this was

"what's the matter." Again, we never saw a pulp extension from ossification with so much of the apparently natural, and we don't know how a pulp ossifies anyhow, and we think we are a geese. O. W.

IMPLANTING NATURAL TEETH IN THE ALVEOLUS.

READ BEFORE THE ST. LOUIS DENTAL SOCIETY BY *R. H. Winsborough, St. Louis.*

The offices performed by a dentist are various and important, and now-a-days considered essential, and a matter of course. Among his labors he adorns the features, adds to the comforts of, and frequently lengthens the lives of his patients. The greater part of his attention is called to the preservation of the natural teeth, and their replacement by artificial ones when lost.

The preservation of the natural organs by filling is undoubtably of more importance than replacing their loss by artificial substitutes. By filling, the loss is prevented. Here, as elsewhere, "an ounce of prevention is worth a pound of cure.

The value of a filling or an artificial denture, depends upon the amount of skill spent in introducing the one, and the manfacture of the other. Though gratifying results can be obtained by replacing the lost natural teeth by false ones, the latter can never equal those imbedded in the alveoli and possessing that mysterious property, *life.*

The great number of teeth that have been wantonly sacrificed since the advent of rubber and nitrous oxide, is appalling. Occasionally we are called upon to replace teeth drawn by mistake, or luxated by some accident. This, with any one, can form but a small portion of his entire practice, yet it should be considered, as the success attending his attempts in these few instances will bring with it much worthy praise.

The records show that success attended the majority of cases, wherein teeth had been replaced, after being out of their sockets, either in whole or in part. In what number of cases *vital* connection had taken place with the *cementum* and *pulp,* has not been satisfactorily ascertained.

A patient that has been so fortunate as to have a luxated tooth become firm in its socket after implanting, is not disposed to

allow the inquisitive as well as the scientific dentist to bore into it, to ascertain positively whether the pulp lives, as well as the cementum, and has to content himself with judging from its appearance. The diagnosis may be assisted by extracting the caloric from the crown of the tooth, by the application of ice or the spray, and accepting the explanation of the sensation to the patient, by himself. If the patient and investigator could be united in sensation for the time as two galvanic batteries, he might be the better able to judge through his educated sensations and perceptive faculties. Sometimes the tooth will unite in both cementum and pulp, resuming life in full; oftener through the cementum alone, the pulp perishing.

We are informed of cases wherein vital connection has taken place through the cementum, if not the pulp, in teeth that had been out of their sockets for from ten to fifteen hours.

The cementum derives nourishment from a source, different and independent from that of the dentine, which form the largest portion of the tooth; the first through the dental periostum, the latter, through the pulp, and consequently that of the dentine, may occur without necessarily effecting any other portion of the tooth, other than to destroy the life-like appearance of the crown.

This we repeatedly see in every day's operations, when the nerve, as it is usually termed, is devitalized, extirpated, and the empty fang filled with gold. Certainly there must be vitality left in the *whole* or *part* of the tooth, or no connection can take place, other than *mechanical.* Some few of the dental profession seem disposed to account for the union of the cementum alone, the pulp dying in many caes, by supposing that the nerves and vessels of the pulp contract within the apex of the fang, thereby precluding the possibility of their unitng with the part from which they had been severed. This is not apt to be the case, as the pulp has its firmest connection with the fang just at the apex, where it would most probably break, at the same time being the most favorable point for uniting. It appears more plausible that the partial connection results from the vitality leaving the pulp previous to replacing the tooth, the cementum still possessing life. And this retention of life in the one part, when it is extinct in the other, *must* result from the difference in the

height of their organizations. The cementum being of the lower organization holds life more tenaciously.

The lower the organization the more persistent the life. Many instances of this is to be seen in the animal kingdom. We need not compare the different species, but take one animal alone, or in short, take the tooth itself. When the dentine will admit of being cut, cauterized, treated roughly generally, there is only temporary pain, no excessive inflammation as would apt to be if such treatment was given to the pulp.

The *cementum* might retain its vitality after the tooth had been out of its socket several hours, yet this could scarcely be said of any other part. It would be best in nearly all cases to extirpate the pulp and fill the fang, previous to replacing the tooth, thereby obviating the great inflammation which would arise from the decomposition of the pulp if it did not reunite, and not endanger the outer portion, leaving it wholly necrosed. The imflammation that follows the implanting of teeth should be treated as periostitis or alveolar abcess, if it should result in this.

The replaced teeth should be ligatured firmly to the remaining ones, to prevent their moving, and increasing the inflammation, at the same time keeping them in place. The retention of a tooth in the alveolus, does not appear to at all depend on the vitality of any part but the cementum. If the pulp be dead, so also, will be the dentine. Here we see the dead and living structures adjacent without causing any disturbance in the economy.

In the sound and healthy tooth, the cementum is adjacent to the dentine, which contains less life than the former, then the dentine is adjacent to the enamel, which is wholly void of life (?) This is the way they are formed by nature to best suit the purposes intended. It does not appear improbable that a tooth entirely dead, could be placed in a socket after extracting one, and remain there mechanically, as a leaden ball does in the flesh, after the subsidance of the inflammation and the parts accommodated themselves to a foreign body. Yet the alveolus would shrink as much if not more than if there was no tooth in place, as it is one of the laws of economy for the alveolus to be absorbed when it has no living tooth to embrace.

In a case where a tooth may be badly affected by abcess, and an attempt is made to cure it, it is done by excising that part of

the root that is affected, leaving it truncated, and then being replaced, the healing process must be effected by the vacant space between the alveolus and truncated root, being filled with granulations as is the case with alveolus after extracting a tooth. It is not probable that the cementum would grow over the denuded end of the fang.

FEES.

A Dentist in his office sat,
Deep in thought, on a subject that
For several days had engaged his mind,
Cleft palate, or something of that kind;
When Smith into his sanctum walked—
"Good morning," he said, and then he talked
On teeth, gold fillings, the toothache too,
And "lots of work for the dentists to do;"
Recumbent then, in the Doctor's chair
He throws himself back, with a solemn air;
Opened his mouth, which plainly told
There were *proximals* there to be filled with gold—
Cavities such as dentists dread;
For the water welled up from the fountain head,
And the patient was nervous as he could be,
And squirmed, and twitched, to any degree;
"Mine's a difficult case," remarked the gent,
The dentist quietly bowed assent.
The rubber dam was fixed at last,
All danger of inundation passed,
And zealously then the Doctor plied
His skillful art, (though his patience was tried),
Then when all were finished he fondly took
His last, long, scrutinizing look
At the beautiful fillings he had made.
"There! finished. Well done," he proudly said.
Smith looked in the glass as he sat in his seat,
And praised each filling, so bright and neat;
His thanks and his smiles together were blended,
Delighted to know all his troubles were ended.
"I am very much pleased; now, Doctor, pray,
What's the amount I have to pay?"
"Well, forty dollars, sir," (said he),
Half whispering; the well-earned fee
Was handed the Doctor with a bow;
And he said, "Well, Doctor, really now,
You'll not get angry if I say

You ve earned that in an easy way."
"What!" (said the Dentist), doubting whether
He understood him, altogether.
"Why, what I mean, is simply this,
Your fee is not at all amiss,
But still, if I my mind may tell,
For three hours' work you're paid right well."
"Three hours! ye Gods!" the Dentist cried,
"Three hours! aye sir, and what beside?
It took me years of toil and thought
To earn the skill—oft dearly bought;
All this you seem to count as nought.
Those teeth of yours my witness stand
The test of toilworn head and hand;
In my opinion they appear.
The timewrought work of many a year.
It takes from youth to manhood's prime
To learn the art such work to do, sir,
This is *my* estimate of time,
But "ignorance is bliss" with you, sir."

JANE H. NEWINGTON.

[*From the New York Tribune.*]

DANGER OF ANÆSTHETICS.

Recent Cases of Death Under Anæsthesia—Some of the Cases During Last Year—To Whom it was Perilous—Dr. Curtiss' Opinion of its Universal Safety—Its Mental Effects.

The case of the lady who died suddenly on Wednesday, after the inhalation of nitrous oxide or "laughing gas," which she had taken for the purpose of relieving the pain of a dental operation, is to be investigated by a coroner's jury composed of medical men. Deputy Coroner Beach, who has made an autopsy of the body, found no organic disease, and came to the conclusion that death resulted from congestion of the lungs, superinduced by the anæsthetic agent and the nervous condition of the deceased. It is hoped the facts of the matter will, as far as possible, be brought out by the coroner's jury. They may reflect neither upon the carefulness of the operator nor the value of the anæsthetic agent, but they will be of great value to the medical faculty and the public in general.

A few months ago, another lady died in a dentists' chair in Brooklyn, while under the anæsthetic influence. The operator

first administered laughing gas, but it did not have the desired effect, and next day he administered chloroform, under the influence of which she died. At the post-portem examination all the organs were found perfectly healthy, and the examining physician gave his opinion that death was caused by nervous shock or paralysis of the heart from the effects of the inhalation of a moderate dose of chloroform. The coroner's jury rendered a verdict to the same effect, and probably without much scientific knowledge on the subject, said in the verdict that "we would urge the disuse of chloroform except in the most severe cases which might require the agency of so powerful an anæsthetic."

Nobody who has had experience or observation in surgical practice will doubt that the discovery of anæsthesia has proved of infinite value to the human race. It is ministered in thousands of cases every year in private practice and in the large hospitals, with perfect safety. But that there are dangers connected with it in some cases, owing to certain conditions of the system or peculiarities of constitution, cannot be doubted.

Dr. Dawson, of Cincinnati, has given in the *Cincinnati Lancet*, (January, 1871), a list of twelve cases of death from the use of chloroform. We have it on the authority of Dr. Conner, of Philadelphia, that "there are at least eight cases on record at the office of the Surgeon-General," of deaths by chloroform in army practice. Dr. Briggs, of Nashville, reports in the *Nashville Journal of Medicine*, (February, 1871), a fatal case which fell under his observation. Dr. Bancroft, of Denver, had a fatal case on the 3d of last March. The operation was a slight one, and less than half an ounce of chloroform was used, but the patient died under it. In Cincinnati, in October last, there occurred a fatal case. The *Philadelphia Medical and Surgical Reporter* (March, 1871), reports a fatal case in Michigan, under Dr. Porter. In this case the lady took chloroform for a dental operation, which was performed, and she drove away, but expired after reaching home.

In the British medical journals of last year may be noticed the record of several cases of death under anæsthetics. The *London Lancet*, (Jan. 28, 1871), reports a hospital case where a slight operation was performed on a male patient, and but one drachm and half of chloroform was used, yet the man died under

it. The *Lancet*, (Dec. 24, 1870), contains a report of another fatal case. The *British Medical Journal*, (March 23, 1871), reports a fatal case where three and a half drachms of chloroform were used, and the alleged cause of his death was paralysis of the heart. The same journal (April 22, 1871), reports two other fatal cases, in one of which a drachm and a half was used, but the amount consumed in the other case is not mentioned. Sir James Simpson, himself, the great Scotch surgeon, who had so much to do with the introduction of anæsthetics in surgical operations, had a case of death under his own hands about two years ago, or shortly before his decease. The patient was a woman 22 years old, and the chloroform was administered by the hands of Sir James himself.

(To be Continued.)

Mechanical and Miscellaneous DEPARTMENT.

PLUGGERS.

Nearly a year ago, at the meeting of the Illinois State Dental Society, we made our first public effort in favor of the smooth pointed plugger. Some time after we made another through the "*Missouri Journal*," since then we have been watching to see what effect they would have upon the profession. They have at last reached the market (see the card from S. S. White, January, 1872, *Cosmos*). There seems to be great fear of the smooth point slipping and possibly doing damage. Now, we maintain, as we have from the first, that this objection is groundless; we have used them for nearly two years and do not remember a single instance where we have been troubled by their slipping. The points we used were Atkinson's, Butler's, and latterly Varney's, with the serrations removed. We have heard of but one sound objection against their use, viz: "They leave the gold so bright that it is quite difficult to see where it is, and is not packed." Now, this objection is even *more* serious than those who advanced it suppose—their only objection was that it costs so much labor

and care to properly condense the gold. We did not heed this because we were willing to give the extra labor and care, in order to have a more coherent filling than we could make with the serrated point. In addition to this, we found in the course of time, that the glistening gold caused too constant a strain upon our eyes, for they pained us considerably, and it was very evident that we were overtasking them, and that seriously; we also had a terrible headache after every hard day's operating. These unpleasant results made us put the matter under serious consideration in order to find some way to overcome the difficulty. During a correspondence with Dr. C. Stoddard Smith, of Springfield, he suggested a broken point as preferable to either a smooth or serrated one, at the same time he rather condemned their use on account of the difficulty of their manufacture into the desired forms. We made one point and were well pleased with it, and believing "where there's a will there's a way," we went to work and made others, with more than satisfactory results.

Last year we were quite enthusiastic over the *smooth point*, and yet contend their infinite superiority over the finest serrated point, but we have nearly abandoned their use for the broken point. By the use of the broken point the gold is really frosted, and not punctured, as by the serrated point. If we could influence instrument manufacturers to stop the improvement and manufacture of the smooth point, it would prevent much dissatisfaction among those who use them, and doubtless be a saving of money to them, for we think in a few years this smooth point will be a drug in the market, having been superceded by the broken point. We want the manufacturers to present to the profession a set of instruments patterned after almost any set now in use, only, instead of the serrated points leave the grain of the steel after breaking,—Varney's instruments we consider the most perfect and simple—by doing this they will have produced instruments that will meet with more favor than any now in the market.

As far as we have used it, the broken point is perfect in its working, leaving the gold frosted or rather its surface quite dim, so at a glance we can tell where it is, and is not packed, and the roughness is so slight that it does not prevent a perfect cohesion, and last, and not least, we are troubled no more with headache,

nor painful eyes. Nevertheless, we must with Dr. C. Stoddard Smith say, that at present the difficulty of their manufacture is an objection to them. It seems almost impossible to break the point perfect at the desired length, but it *can* be overcome. We have only tried it by breaking but doubt not it can be accomplished by some chemical action upon the point, but be this as it may it *can* be done by breaking. The most difficult one to make is the *foot plugger*. It can be made by taking a bar of steel the size desired for the handle, the end desired for the point must be drawn down to a little larger, and about the shape desired for the face, harden to a full hard and break to a square break—it is often necessary te break two or three times before this is done—and then draw the temper to a soft, and shape the shank with a file, heat to a cherry red, place upon the heel and with a few gentle blows of the hammer applied to the instep the face is brought to the desired angle, then file to the shape wanted, and temper a little hard. As far as we know, it is necessary to first harden and then break the steel, in order to get the face, and work from that to get the instrument, using proper care not to injure the grain of the steel while it is soft.

We will not attempt to describe them any farther, or to tell how beautifully they work. As yet we know but comparatively little about them, but write this that others may try them and endeavor to devise some way to facilitate their manufacture. We know of several dentists who long ago knew of the broken point and used them to a considerable extent, but there are many who never heard of them, for such these remarks are intended.

PYROXYLINE.

By Jas. A. Troutman, *Toronto, Canada.*

To the Editor of the Missouri Dental Journal:

Dear Sir:—Having perfected my process for working pyroxyline as a base for artificial dentures, I ask the privilege of placing it before the profession through the medium of your excellent journal, confidently assuring you and the profession generally, that I have succeeded in overcoming the difficulties which have stood in the way of a practical application of this material as a

base. If the following instructions be followed closely, there will be no shrinkage of the attachment, or warping of the plate, as in the Brockway method.

The plate is swedged in metalic dies, by pressure, fitted to the mouth and the articulation taken same as with a gold plate. When the teeth are ground and adjusted on the plate, the case is invested in plaster, the same as in gold work for backing the teeth, being careful to allow the plaster to cover the ends or cutting surface of the teeth, and the lingual surface of the plate, to keep all firm on the model, and the teeth in their places after the wax is removed. When the investment is hard remove all wax from the inside of the plate and teeth, being careful to make all clean. Varnish the plaster and all exposed parts of the plate, except where the attachment is to come, with mucilage, the object of this coating being to prevent the ether from acting on any parts but those where the attachment is to be made.

Serrate this portion of the plate and the case is ready for attaching the teeth. Instead of using the material in the form of filings, as in the old methods of working this base, solid pieces of plate are now used. These are first prepared by placing them in a jar, and pouring over them alcohol enough to cover them. In a few hours they will become softened and pliable, so that they can be pressed into any desired form or shape. Thin strips of this softened pyroxyline are now pressed firmly and solidly into the space between the teeth and plate, occasionally moistening with ether, continue to add strip after strip till the pins are reached, then a strip is placed above them, and finally a strip is placed over them all covering the heads of the pins and making the attachments as full as desired. In placing these strips of softened pyroxyline in position each successive strip is moistened with ether, not enough to dissolve it, but only enough is used to make it adhesive. When the inside is built up sufficiently it is filled up with plaster. When this plaster is hard the covering is removed from the outside of the teeth and plate, and the edge of the plate thoroughly cleaned and serrated. Small strips of the softened pyroxyline are then pressed into all the spaces about the teeth, and finally a long strip of the material is pressed firmly up against the edge of the plate and teeth, commencing at one heel of the plate and passing round to the other, making

it adhere firmly by occasionally moistening it with ether, thus forming a complete rim. The instrument required to do this part of the work is a moderately sized burnisher, which should be kept warm. It is not necessary to wait any length of time for the material to dry, as the work progresses. When the case is done it may be left an hour or so and then finished the same as a rubber case. The mucilage is removed by washing in warm water. When finished the case will be free from discolored spots and blister, so commonly observed in this material when worked by the old methods, the effect of the ether. The result will be a clear translucent plate, through which the heads of the rivets can be seen.

In cases where one tooth stands alone, or where the space between the natural teeth is narrow, a plate tooth instead of one designed for rubber should be selected; back it by riveting a piece of solid pyroxyline to it, fit it to the base, serrate the base and the backing, and press a piece of the soft pyroxyline over the serrated surfaces, moisten with ether and allow it to dry for a short time and the case is completed.

In all cases, to insure success care must be taken to have the ether of the proper strength. A large proportion of the ether found in the market and sold for pure is very poor. Eighty per cent. concentrated sulphuric ether reduced with ubout twenty per cent. of alcohol makes a good solvent, or the pure unconcentrated without the alcohol may be used. By this process, a full upper and lower set of teeth can be completed in from five to seven hours, without the slightest shrinkage or warping of the plate. The shrinkage and warping of this material when worked by the old method was due to the solvent, a large quantity of which was necessary to thoroughly dissolve the comminuted material, which caused it to swell, and in drying it out it was impossible to thoroughly condense it again. A portion of the strength of the pyroxyline was also lost by this process. By the above process, but little ether is required to make a firm attachment, consequently there is but little change in the material, and but a short time is required to dry it out, and when completed, the result is a solid translucent plate, so clear that you can see the pins through any part of the attachment and cannot detect the attachment from the base.

A NEW METHOD OF HARDENING RUBBER.

By James E. McCabe, *Bolivar, Mo.*

The plate to be hardened or vulcanized, is flasked in the usual manner, the same apparatus being used as for steam. The difference is simply this:

I use ammonical gas instead of the steam. The gas is formed of equal parts of chloride of ammonia and hydrate of lime—common lime slacked in a covered vessel. For a single case vulcanizer, 15 or 20 grains of each ingredient, finely pulverized, should be placed in a tin box, sufficiently perforated with small holes to allow the gas to escape freely, which will generate very rapidly from about 60°. Place the box in the vulcanizer with the flask and apply the heat in the usual manner, allowing about half an hour for the mercury to rise to 320° so that the gas may have time to penetrate the plaster, then vulcanize for fifteen or twenty minutes time. The above time will harden the same rubber that requires by the old process an hour and a half, and I believe, leaving it in a much better condition for the mouth. The chlorine of the ammonia being set free, becomes a powerful disinfectant, removing the bad effects of the sulphur and coloring matter of the rubber, and I find without injury to it.

The gas can be formed by other means than herein stated, but I believe this to be the best method, and taking time into consideration, it is cheaper than water. It costs but a trifle to procure the ingredients used, and in large establishments for hardening rubber goods, the gas can be converted into spirits of ammonia with a profit. I intend to introduce it as a medium for hardening rubber for all purposes. In regard to the vulcanizer, one made of iron, costing $2.50 would be better than the copper ones now in use from the fact that the gas acts on the copper, but this can be prevented by oiling the vulcanizer before using, and cleaning afterwards. It is well known that ammonical gas is not explosive nor inflammable; in this respect it is safer than steam.

The flasks should be perforated, top and bottom, and in fact all around to allow the gas to penetrate the plaster. For a close flask, about 30 grains each of the ammonia and lime should be used, producing a greater volume of gas and conse-

quently more condensed and more penetrating. Ammonia preserves iron, and consequently that would be considerable of an item to dentists, and in fact, to all who harden rubber.

JOURNALISTIC.

The *Dental Register* for February opens with an article by H. L. Sage, upon Dental Irregularities, which describes in detail the treatment of a case of irregularity such as is met with occasionally by nearly every practitioner, and which was treated by the various methods that are familiar to our readers. The case was completed in eleven and a half months, having been considerably retarded by non-attendance of patient. We are particularly struck with the improvement manifested in the *descriptive powers* and *style* of the author since his former effort, which we noticed in a former journalistic review. Such progress is gratifying to all who feel an interest in the future welfare of the profession.

The next article is upon the theropeutic action of arsenic, and was collated from a paper read before the New York Medical Society, by Dr. Cundell Juler. He regards it as a sedative acting upon the nervous system. After enumerating several diseases in which it is indicated, the author states that the "smallest fatal dose in an adult placed on record, is stated to have been thirty grains of the powdered white arsenic." We would not advise our friends to use it in *thirty* grain doses however.

The next twenty-five pages are devoted to a report of the last meeting of the Ohio State Dental Society, and their editorials, one of which we propose to copy into our pages, as it may be of interest to those who are desirous of learning something of the Folsom patent ridge and flexible border, &c.

The *Cosmos* of February, opens with an article by Frank Abbott, M. D., of New York, upon alveolar abscess. As nothing new appears in this, we pass on to the next article by Norman W. Kingsley, of New York, upon the "Treatment of Irregularities." This describes a case in which the upper teeth when the mouth was closed fell inside of the lower *teeth*. Both jaws were

well formed, and the teeth in each jaw symmetrical. The only treatment resorted to was the insertion of "wedges of plastic rubber and used of such thickness only, as would exert a gentle pressure." The wedges were placed between all of the teeth, as the teeth became separated from each other, the upper jaw necessarily expanded, and in twenty days the occlusion was normal, and a retaining plate was inserted which was worn for several months.

Wm. H. Atkinson, upon the "Career of Elements of Tissues" follows. This treats of interesting subjects and touches with rare force, questions, the consideration of which leads us to grapple with the most profound problems of being. As it is to a considerable extent written in the *Atkinsonian* language, its views will not be so commonly understood and appreciated as they would be were they placed before the profession in a simpler form.

The *American Journal of Dental Science* commences with an article by Arthur J. Ford, of Atlanta, Georgia, upon capping pulps. The author has had very excellent success in this mode of treatment. He fails to detail his method of proceeding, but gives the results of a large number of cases, nearly all of which proved successful. It is somewhat strange that there should be such a wide discrepancy in the results attained by different operators in capping pulps, particularly when the manipulations seem to be pretty nearly the same. We cap pulps with fully as much confidence as we ever had in extirpating them and filling the fangs, the proportion giving any trouble at all after the first thirty minutes being extremely small, and yet we constantly find communications in the journals from those who seem to have poor success in this mode of practice. We are inclined to think that want of confidence in this, as want of confidence in filling fangs, leads to many failures. When one takes pains to fill a fang so that he can remove the fang filling if it should give trouble, he is apt to make a filling that is really fit for nothing else but to be *removed*, and failure results from the imperfection of the filling, and I am confident that many failures in capping nerves result from a want of confidence in the operator, and in consequence of this apprehension as to the final result, they cap the pulp and then defer filling with gold until another time, so

that they may remove the oxychloride at any time if symtoms of pulpitis supervene. In the first place the preliminary treatment is not so thorough, as a rule, as it would have been if the operator had not felt that he could easily remove the cap and try it again, or destroy the pulp if it did not do well, and then many cases are, in all probability, caused to fail by the testing process as it is called. Although it is recommended that the oxychloride cap be covered and kept so from the time that it is inserted until the cavity is finally filled with gold, this is not usually done, and the oxychloride is saturated with the juices of the mouth, the animal matter of which, finally decomposes, and the resulting gases excite inflammation in the delicate pulp structures, and periostitis supervenes.

It is the practice of many who report good general success in this operation, to cap and only wait long enough for the oxychloride to harden, and then fill with gold. This may be done in ten or fifteen minutes after the introduction of the cap, and without removing the rubber dam from the mouth. This is the process which we almost invariably pursue, and we are satisfied that it is judicious practice, and when carefully carried out will be followed by satisfactory results.

This want of confidence is exhibited in the next article of the *American Journal* upon "Filling Teeth," Dr. E. G. Wheeler, of Alabama. He states that he would not feel justified in capping the nerve in persons under twenty years of age. Now this is the very place where we should consider the chances much better for the patient—when the pulp is capped than when it is destroyed. In many cases the open condition of the still undeveloped apices of the fangs forbids the practice of fang filling with any good prospect of success, and moreover, the active changes which are taking place in the tissues at this age are more favorable for the rapid production of a bone cap for the pulp beneath the oxychloride than would obtain in after years.

We constantly cap pulps in children of all ages, and it is rarely the case that any trouble supervenes from the operation. We can scarcely speak too strongly against the murderous practice of killing pulps.

The *Medical Record*, of New York, comes out in improved type and paper, and laden with interesting facts for all branches

of the medical profession. We hail with pleasure everything that marks progress and improvement in medical and dental literature.

CELLULOID.

Our report on the celluloid base which we published in the December number is not, it appears, acceptable to the advocates, and those interested in the sale of this article.

Our space will not permit answering in detail as we intend doing, the reports published in the March number of the *Cosmos*, but we cannot let this opportunity pass without putting a stop to the very small hole in the report, through which our friends have attempted to crawl. The reason assigned for our failures, viz: that we put up our cases in boiling oil, is too small to deserve even a passing notice with those familiar with this inflammable material. For the information, however, of some who may not know much of the properties of celluloid, we will state that in *no case* that we have put up, has the themometer furnished us by Perkins, Hyatt & Co., indicated a degree of heat above 310°. In our statement that we boiled our cases in oil, we but adopted the phraseology of other writers in describing the method of working this material. See *Cosmos*. No one would be better pleased than we, to see this base prove all that is claimed for it, but we must have better proof of its utility than anything we have yet seen before we can unqualifiedly recommend it as a substitute for "that other-thing."

IMPRESSION CUPS.

We have received a set of impression cups, 32 in number, from S. S. White, and would call attention to the improvements made in this important adjunct to a well furnished dental laboratory.

They are of block tin, beautifully finished. The improvements on those heretofore in the market, are the increased length of handle and the change of the position of the handle on the lower cups, thus rendering them much more convenient. The decided improvement in the form of the lower cups, better adapting them to the parts of which an impression is desired, a

fault which, with the old style of cups, could only be overcome by the aid of wax. We notice especially a cup designed for taking impressions of the natural teeth, upper, or in cases of high arch, which is admirably adapted for this purpose, it is ot the usual form; in the center, on the palatine surface is a movable convex plate, corresponding in general outline with the forms of the palate. This plate is retained in position by means of a pivot, attached to the under side ef the plate by a ball and socket joint, and passing through the center of the cup. In use, after the cup is placed in the mouth, the finger of the operator is placed on the end of the pivot, protruding from the lingual surface, and by gentle pressure the wax, or plaster, is forced up into the arch, thus securing a perfect impression in cases where, with the erdinary cups much difficulty is often experienced.

By request of Mr. White, we suggest, that to make the set all that may be desired, a lower cup smaller than any in the set sent us, should be supplied for taking impressions for children in cases of irregularity. Also, that the inside rim on the cups No.s 14, 15 and 16, designed for taking impressions of the lower teeth, should be double its present width, this form being much better adapted for holding the wax or plaster in the position to secure a perfect impression.

E.

DECLINED.—J. H. R., D. D. S., your ——— communication recommending a patent of questionable value, is most respectfully declined, as it contains nothing new or of any interest to our readers. Dr., the admissionc ontained in your article that you had invested several hundred dollars in said patent, makes the object of its publication too apparent.

NEW ORLEANS COLLEGE OF DENTAL SURGERY.

The Annual Commencement of the New Orleans College of Dental Surgery took place on Thursday evening, March 14, at the College hall, No. 67 Carondelet street. Prof. Jas. S. Knapp, Dean, conferred the degree of D. D. S. upon the following named gentlemen :

R. E. Bullington, Miss; E. E. Souchon, La; N. N. Hayes, Tenn; P. A. Remey, La; A. L. Cooke, Texas; M. Viet, La;

R. J. Miller, Miss; T. J. Wall; Ga; J. N. Tircuit, La; J. E. Gullette, Ala; F. Tircuit, La.

The Salutatory was delivered by Prof. S. P. Cutler, M. D., A. E., D. D. S. Valedictory, by R. E. Bullington, D. D. S. The number of matriculants for the session of 1871–2, 27.

MISSOURI DENTAL COLLEGE & ST. LOUIS MEDICAL COLLEGE

The Sixth Annual Commencement exercises of the Missouri Dental College was held in connection with the Thirtieth Annual Commencement of the St. Louis Medical College, at the Temple building Friday evening, March 15th, 1872, at 7½ P. M. The Valedictory address to the class was delivered by R. C. Volker. The degree of Doctor of Dental Surgery was conferred by Prof. Judd, Dean of the Dental Faculty, upon the following named gentlemen:

A. C. Walker, Ala; A. M. Esterli, Mo; M. Guhman, St. Louis; T. H. Weaver, Va; E. F. Aehle, Mo; C. S. Morgan, Pa.

Matriculates for the session of 1871–72, 17.

The degree of Doctor of Medicine was conferred by Professor Hodgen on a class numbering 68. The number of matriculants for the session of 1871–72, 184. The address was delivered by Prof. J. W. Clemens, M. D.

NOTICE.

With this number of the JOURNAL will be found the February number of the *Mirror*, which will be the last number sent without the order of each subscriber accompanied by the subscription price, fifty cents. Will you take it?

COMPLIMENTARY.

At a meeting of the Executive Committee of New York and Brooklyn, March 21, '72, to hear the report of the delegates to Washington, the following resolutions were adopted, and it was desired that copies should be sent to the dental journals for publication, as a tribute eminently due to the gentlemen mentioned:

Resolved, That the energy, ability, and integrity, which have been shown by our counsel, Gen. John A. Foster and Samuel J. Glussey, Esq., in the preparation and presentation of the case of

B. E. Gardner against the Cummings' patent, just argued in the United States Supreme Court at Washington, entitles them to this recognition of their services by the committee, and merit this public acknowledgement of their untiring labor, and skillful management of the case, also,

Resolved, That the committee gladly recognizes their obligations to the gentlemen of the Baltimore and Washington committees, and to their counsel, Orville Horwitz, Esq., for the efficient support they have so promptly and cheerfully given to the measures, which it is hoped, will result in our speedy and final success.

C. A. WOODWARD, Chairman.

W. A. BRONSON, Secretary.

NEW YORK, March 23, 1872.

Editor of the Missouri Dental Journal:

DEAR SIR:—My attention has been called to a remark in the December number of your *Journal*, from which it might be inferred that the University of Michigan is charged with conferring a degree—that of Pharmaceutical Chemist—upon persons who have not taken a corresponding college course. Be so good as to inform your readers that the American Pharmaceutical Association rejected the delegation from the Michigan University School of Pharmacy because this school does not require *apprenticeship in the shop* before graduation, and *not* because of any alleged insufficiency of its *college courses required* before graduation. The degree in question has not been granted by this school to any person who has not previously fulfilled its published requirements.

A. B. PRESCOTT, Prof. Pharmacy.

MICHIGAN UNIVERSITY, January 10, 1872.

OBITUARY.

DR. ELISHA BAKER.

At a meeting of the dental profession convened on Saturday afternoon, March 9th, 1872, at the residence of Dr. J. G. Ambler, No. 25, West Twenty-fifth street, New York, relative to the death of Elisha Baker, M. D., which took place the day previous, Dr. F. H. Clark was called to the Chair, and Dr. Charles Merritt elected Secretary. Dr. Ambler explained the objects of the call,

viz: to take some action as a body, regarding the death of Dr. Baker. After the very handsome tribute paid to his memory by those present, it was on motion,

Resolved, That our heartfelt sympathies are tendered the family of the deceased, and that we will manifest our affection and appreciation of his many virtues, by attending his funeral.

It was further *Resolved,* That Drs. J. G. Ambler, Wm. H. Atkinson, J. H. Foster, and Charles Merritt, be a committee to draft suitable resolutions, expressive of the sense of the profession, present a copy to the family of deceased, and publish in the dental journals.

CHARLES MERRITT, Secretary.

WHEREAS, Death at no time is a welcome visitor, and most unwelcome when a bright and shining light, an honored and revered citizen is its victim.

We are this day called to mourn the loss of one highly esteemed in the community in which he lived, a pioneer in the profession of dentistry, one who by precept and example, labored hard to elevate the standard of professional excellence, during an unprecedented series of over 40 years, and his retirement from active practice some fifteen years since, carried with him the universal respect, esteem, and regard of his professional brethren. THEREFORE

Resolved, That while bowing in humble submission to the decree of Him who doth all things well, and with hearts overflowing with gratitude, that He did vouchsafe to us such a man, and that he has been permitted to leave such a legacy; we would place on record these expressions of our bereavement and sorrow, with the assurance that the name of Elisha Baker will long stand on the historic page, as one of the brightest ornaments of our profession.

Signed J. G. AMBLER, WM. H. ATKINSON, J. H. FOSTER, CHARLES MERRITT, } Committee.

DR. A. V. SAYLES.

RESOLUTIONS OF RESPECT.—At the annual meeting of the Iowa State Dental Society, held in the parlors of the Ogden House,

Council Bluffs, Iowa, July 13th, 1871, the following preamble and resolutions were unanimously adopted:

WHEREAS, Dr. A. V. Sayles, an active member of this Society, since 1854, and Vice President the past year, a kind, genial, and Christian gentleman, has been removed from us by death, and

WHEREAS, In the death of our departed brother, removed from his labors in the prime of manhood, from his family in the fervor of affection, and from society in the ardor of usefulness.

Therefore, Resolved, That in the dispensation of the Almighty Ruler, in the removal from us of our worthy brother, we recognize a bereavement which the dental profession have just reason to deplore.

Resolved, That we as a Society hereby tender to the bereaved family of our departed brother, our deepest and most sincere sympathy, in this the hour of their great affliction.

Resolved, That a copy of the eulogies, and this preamble and resolutions, be spread on the Minutes of this Society, and a copy of these resolutions be sent to the widow of the deceased, also a copy be sent our leading journals for publication.

H. E. PEEBLES, D. D. S.

RESOLUTIONS OF RESPECT.—At the annual meeting of the Iowa State Dental Society, held in the Ogden House parlors, Council Bluffs, Iowa, July 15th, 1871, the following preamble and resolutions were unanimously adopted:

WHEREAS, Dr. H. E. Peebles, of St. Louis, Mo., an honorary member of this Society, and a kind, genial, and Christian gentleman, has been removed from us by death, and

WHEREAS, In the death of our departed brother, taken from his labors in the prime of manhood, from his family in the fervor of affection, and from society in the ardor of usefulness.

Therefore, Resolved, That in the dispensation of the Almighty Ruler in the removal from us of our worthy brother, we recognize a bereavement which the dental profession have just reason to deplore.

Resolved, That we as a Society hereby extend to the bereaved family of our departed brother, our deepest, and most sincere sympathy, in this the hour of their great affliction.

Resolved, That a copy of this preamble and resolutions be spread on the Minutes of this Society, and a copy of the resolutions be forwarded to the widow of the deceased, also that a copy be sent our leading journals for publication.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] APRIL, 1872. [No. 4.

[*From Transactions of the Odontological Society of Great Britain, Nov.* 1871.]

ON THE RELATION OF THE TEETH AND MOUTH TO MENTAL DEVELOPMENT.

BY DR. LANGDON DOWN, *Physician of London Hospital, late Resident Physician of Earlswood Asylum, &c.*

GENTLEMEN:—When your President did me the honor of requesting me to read a paper before your Society, I felt at first some reluctance, from the consciousness that one of a very practical character was not within the scope of my power.

It occurred to me, however, that there was a branch of inquiry on which I felt considerable interest, and which had some slight bearing on the department of medical science represented by this Society. I thought, moreover, that I should derive great gain myself in bringing my observations before you, from the fact that while some of my work has been with a somewhat special class of humanity, you would be able to correct or confirm my views from observations over a wider and more varied field. It is thus, by the comparison of results obtained from opposite stand-points, that broad principles may be elicited, where otherwise narrow, and possibly mistaken, views might be entertained.

At an early period of my study of the mental affections of childhood and youth, I became convinced that the question involved a far larger field of inquiry than the mere psychological phenomena which was presented before me,—that, interesting as were the examples of mental deviations which were the every-day object of one's contemplations, they were really only a part

of the great subject; and one became convinced, from observation, that the psychical deviations were as interesting and important as the psychical, in relation to the study of mental alienation, and especially to that form of it which had a congenital origin or proclivity. It became clear to me that idiocy and imbecility were not simply disturbances of brain-power,—were not simply nerve-lesions in the narrowed acceptation of the term—but were profound diseases involving almost every organ and system of organs in the body. True, the encephalic ganglia were found altered, either in quality or quantity, or both; the convolutions of the brain might be reduced to quadrumanous simplicity in one case, or present remarkable symmetricality in another; but these were conditions that could only be ascertained on post-mortem inspection. The question that presented itself to me was,—Were there any outward and visible signs of inward mental disturbance? If idiocy were something more than brain alteration, it followed that an inquiry into the condition of the other organs might establish come correlative change in them. With this object in view, I made a careful investigation into the bodily condition of nearly a thousand feeble-minded youth—their height, weight, and bodily conformation; into the condition of their muscular development, the state of their eyes, the shape of their ears; and last, but not least, into the structure of their mouths and the contents of the oral cavity. It was in my inquiry into the condition of the teeth and mouth especially that I arrived at the conclusion that, in by far the larger number of instances, I was able to indicate the period at which the depressed condition commenced, and to predicate in some degree the amount of improvement which physical, intellectual, and moral training might possibly effect.

Thus an examination of the mouth afforded me a valuable guide both as to diagnosis and prognosis in cases which, without such guide, would be frequently surrounded with insurmountable difficulty.

In consultations one is often pressed by the friends of the patient for an opinion as to the date at which the affection commenced. It is always a relief if an opinion can be given that the child was born intelligent; that the calamity is the result o some after-birth catastrophe. Curiously enough, there is

often a degree of wounded pride if it is decided that the child was defective from birth. It is by an appeal to the physical conformation only that the decision can be made. In children whose idiocy is accidental, arising from causes operating after uterine life, there is but slight deviation from normal condition in the state of the mouth and teeth, while it is in those whose malady is congenital, especially where arising from causes operating at a very early period of embryonic life, that the deviation of the mouth and its appendages form a normal condition is most pronounced.

It often happens to me to see children, about whom the only anxiety is that they do not speak. The parents seek for an explanation in the condition of the palate, little suspecting that the palatal deformity is only one of the manifestations of a congenital mental defect, in which ideas are so little formulated that language is not needed.

I could occupy a large portion of the time of this meeting in illustrating the value of an appeal to the condition of the mouth as an aid to diagnosis in such cases; a few must suffice.

A year or two since a very intelligent medical practitioner in the country was called in to treat a case of infantile convulsions. The condition of the child was desperate. He poured from an ewer a stream of cold water over the occiput of the child; the convulsions ceased, the patient was rescued from impending death, but grew up to be an idiot. The friends of the child took up a position which involved a trial in a court of law, equivalent to an action for malpraxis against the medical man. By a judge's order, I, with other medical men, saw the child; and we were able to say not only that the child was an idiot then, but, by an examination of the mouth, to assert that the idiocity was embryonic as to date, that the convulsion was an epiphenomenon, and that the medical man was in no way responsible for the mental condition of the child whose life he had rescued. Thus, by an appeal to physical conformation, we were able to date the mental defect, and to save the reputation of a medical brother from undeserved opprobrium.

It will be within your remembrance that this town was some years since greatly moved by a sensational trial before a Master in Lunacy, in which an attempt was made to save from himself

a youth with an honoured name. Liberty of the Subject was the popular cry, and after conflicting evidence, the popular will prevailed, and the free agent went rapidly to his doom. The counsel for the defence, in specious terms, suggested that the mistake about this young man's imbecility arose from a defect in his mouth, by which imperfect speech resulted. I showed at that time—too late, however, to influence the verdict—that that was the most important admission that could be made,—that, given any amount of mental obliquity, no stronger confirmatory proof could have been adduced of his imbecility than the physical defects of mouth to which this lisping speech was due. The sequel proved the congenital nature of the case.

No less valuable, however, is a study of the condition of the mouth as a means of prognosis in any given case. In children who exhibit any want of mental power, or present anomalous moral or intellectual symptoms, no more anxious question is suggested than that relating to the future of the case. The disposition of property, and other family arrangements, depend a good deal on the answer which is given. We have learned by experience this important fact, that the child who has been born with defective intellect is more susceptible of improvement by physical and intellectual training than the child who has been born with full possession of his brain-power, and has afterwards been deprived thereof. In other words, that of two children who are the subjects of solicitude, other things being equal, there is greater probability of improvement for the patient with an ill-developed, than the one with a damaged, brain. Often it happens that a microcephalic idiot, about whom the inexperienced would entertain no sort of hope, will far outshine, under intellectual training, the fine, well-developed boy the membranes of whose brain have been the subject of inflammatory lesion, and about whose capillaries lymph has been inextricably effused. An appeal to the condition of the mouth is an important aid in determining whether the lesion on which the mental weakness depends is of intra-uterine or of post-uterine origin. In the event of the mouth being abnormal, it indicates a congenital origin; while if the mouth be well formed, and the teeth in a healthy condition, it would lead to the opinion that the calamity had occurred subsequently to embryonic life.

Of course, our judgment would be formed after a physical examination of every organ—of the condition of the ears and eyes—of the shape of the cranium; but what I want to enforce is, that most important information is derived from an examination of the mouth.

I have had this day brought to me a young girl of manifestly defective power, and the parents were extremely anxious to know whether it was a congenital case. Their anxiety was based partly on an unwillingness for either branch of the family to allow that there was on their side any hereditary tendency to mental disease—a sort of rivalry as to the purity of the two antecedent sources; but mainly also to ascertain with what degree of fear they must watch the development of their other children, and how it might affect the education of their sons, or the marriage prospects of their daughters. No study of the mental phenomena themselves would have enabled me to venture an opinion; but an examination into the totality of the physical conformation in general, and of the mouth in particular, enabled me to refer the calamity, with a considerable degree of certainty, to a sun-stroke in the tropics; to clear the other members of the family of the suspicion of insane proclivity, and to defend the purity of the rival stocks.

Let us now consider what are the conditions of the mouth associated with mental defect.

The lips are usually thick, the thickness being greatly more marked in the lower than in the upper one. In addition to the thickening, they are often striated, marked by transverse fissures: this character is more generally seen in a class of congenital idiots, which I have elsewhere described as Mongolian idiots, from their resemblance in physical character to the Mongolian race. Often the lips are deficient in muscular power, which interferes with their prehensile function, and which also induces a tendency for the saliva to run over the chin. The mucous membrane is extremely liable to chronic inflammation, and ulceration is produced by the slightest pressure against prominent or uneven teeth. The glands of the mucous membrane of the mouth generally, as well as the salivary glands, are usually hypertrophied; and this is another factor in the production of stammering.

There is a marked postponement in the evolution of the first teeth. Looking over my notes of a very large number of cases, I find that the first dentition is almost invariably postponed. The ease with which dentition is effected varies; sometimes the teeth are cut so easily that no disturbance to the general health is observed; in others it is the period at which violent convulsive attacks are developed, imperilling greatly the feeble mental endowment of the child. Contrary to the law that tissues which are slowly formed are the more persistent, these primary teeth have a more temporary existence than usual. They are frequently dark, speedily become carious, and their stunted growth often the more stunted from the incessant grinding of the teeth, which is so frequent during the infantile life of the children. I have often been curious to ascertain the cause of this grinding. In most cases it appears to be a kind of automatic movement, not depending on the direct influence of the will; one of those rythmic movements of which there are several amongst children of this class. In others it would appear to be purposely developed to produce a monotonous sound, which imparts pleasure to the feeble-minded. Not only, however, are the primary teeth ill-developed; they are often irregularly developed as to sequence. Nothing but disorder is noticed in their succession.

Just as the evolution of the temporary teeth is accompanied by cataclysmic effects, like phenomena not unfrequently accompany the evolution of the permanent teeth. The epileptiform convulsions which accompany the first, not unfrequently, after a long interlude, reappear at the cutting of the second, to be followed by another interlude, and a recurrence at puberty I have now under my observation a boy whose first teething was marked by paroxysmal phenomena of the most violent kind, which ceased when the physiological effort was over. He has now arrived at the period of second dentition, and the evolution of every tooth is accompanied by well-marked epileptic attacks, and by a corresponding decadence in his stunted mental development.

The evolution of the second teeth is also frequently postponed; and there is slight irregularity in the sequence of their development. A marked character of the teeth is their irregularity as

to position. They are often crowded—so crowded as to present their sides instead of their anterior surfaces. They are often arranged on different planes. The canine teeth are frequently unduly prominent, and a marked sulcus is sometimes seen between the incisors and canines, with prominence of the incisors, The teeth themselves present very frequently a honeycombed appearance, from an absence of continuity in the enamel, and they undergo speedy decay. Nothing is more marked than the temporary nature of the co-called permanent teeth.

It has been a matter of considerable interest to me to ascertain how frequently the syphilitic teeth, so well described by my friend and colleagueMr. Hutchinson, were to be met with among the feeble minded; but the result of my inquiry has been to discover very few among them who were in this way indicated to be the subjects of congenital syphilis. Very few have had syphilitic teeth; but where I did discover them, I always had confirmatory evidence of the syphilitic history of the case, and the condition of the teeth was always associated with the chronic inflammation of the cornea to which Mr. Hutchinson has called attention. I have, therefore, been led to the conclusion that syphilis is not by any means an important factor in the production of congenital mental disease. The honeycombed teeth are, I am persuaded, perfectly distinct from the syphilitic, and are manifestations of that grave perversion of nutrition which implicates in many cases every tissue in the body.

The tongue presents peculiarities worthy of notice. It is frequently unusually large. Its inordinate size generally arises from increase in length, and also from an absence of muscular tonicity. The surface is often curiously corrugated, presenting numerous fissures. The surfaae is rendered still more rough from hypertrophy of the papillæ. Not only is the tongue inconveniently large, it is but feebly under the influence of the will. There is a want of co-ordination in its muscles; so that not only is the more intelligential act of speaking performed awkwardly when even there are ideas to be communicated, but the simple voluntary act of conveying the food to the posterior part of the mouth, where the reflex act of deglutition is excited, is effected with difficulty, and thus an almost instinctive act is rendered to some extent abortive.

Of most significant value, however, is the condition of the palate. I have made a very large number of careful measurements of the mouths of the congenitally feeble-minded and of intelligent persons of the same age with the result of indicating, with some few exceptions, a markedly-diminished width between the posterior bicuspids of the two sides. The exceptions were some few cases of Macrocephalic idiots, who had inordinately large crania, depending in some cases on hypertrophy of the brain, or more frequently on chronic hydrocephalus. In these exceptional cases the palates were as widely in excess as usually they are less than the normal width. One result, or rather one accompaniment, of this narrowing is the inordinate vaulting of the palate. The palate assumes a roof-like form. The vaulting is not simply apparent from the approximation of the teeth of the two sides, it is absolute—the line of junction between the palatal bones occupying a higher plane. Often there is an antero-posterior sulcus corresponding to the line of approximation of the two bones.

There is very frequently a deficiency in the posterior part of the hard palate, from a want of development of the palatal process of the maxillary bone, as well as absence of the palatal process of the palate bone. As a result of this defect, the false palate hangs down adnormally, and interferes with clear phonation. At an early period of my investigations I was prepared to find a large number of cases of cleft palate. This does not appear, however, to be a frequent defect—not more, according to my statistics, than five in one thousand cases. Bisection of the uvula occurred four times in one thousand, and absence of the uvula twice. The cause of this frequent excessive vaulting of the palate is not quite clear; it may possibly arise, as has been suggested, from arrest of development of the sphenoid bone, or defective growth of the vomer. It has been attributed by one writer to a cause which I think cannot be allowed, viz: sucking the thumb. This gentleman attributes idiocy entirely, or almost entirely, to fruitless sucking. The chain of events, according to his theory, is this:—The fruitless sucking gives rise to secretion of gastric juice in the stomach when it has no physiological use,—that this acts as an irritant on the intestinal mucous membrane, giving rise to diarrhœa and disturbed nutri-

tion, eventuating in convulsions and idiocy; and that the roofed-palate I have described is the physical result of the pressure of the child's thumb against the palate. Banish fruitless sucking, and idiocy would be unknown. I believe this to be a thoroughly mistaken notion. Idiots are not much more prone to fruitless sucking than other children, and I have examined the palates of several fruitless suckers among the sane without finding the palatal defects I have described. I think it will require no argument to prove that the defects I have described are developmental defects, and that they betoken a cause long anterior to the time when sucking the thumb is practiced, unless the habit be an intra-uterine one. The theory overlooks the whole bearing of hereditary influence, and of nervous shocks and physical illness to the pregnant woman, as potent causes of imbecility in the offspring, and negatives the idea of the congenital nature of the ailment.

There is one practical point with reference to the palatal defect which has some interest to me. One of the greatest difficulties we have, but one which, when overcome, brings the greatest *kudos*, is the teaching an idiot or imbecile to speak. We have to furnish him with a vocabulary, to practice him in tongue gymnastics, to build up for him a language, and to lessen the mutiny of the muscles of the tongue. When all this is in part accomplished, the arched roof of the palate is a great trouble. Imperfect speech still remains. Can nothing be done mechanically in this direction? Can the members of this Society tell us of any success they have had by diminishing the palatal cavity among the sane, that may augur hope for us with the insane? Often cases are met with where the palatal difficulty is just the hindrance to an improved imbecile mixing with the world, and taking his place with his fellows.

Among idiots and imbeciles there is often discovered a want of symmetry in the cranium. The plan which I adopt of taking the shape with a strip of lead shows this defect admirably, and enables me to sketch the precise deformity on paper. This want of symmetry also affects the bones of the jaw, leading to a great difference between the two halves of the maxillary bones. A very marked example of this kind was seen with me a short time since by my friend Mr. Ramsey, who advised the removal

of some teeth to make room for the movements of the tongue. It was an excellent example also of the obtuseness to pain which is common among the feeble-minded. Often they are anxious to have their teeth extracted, as if it were a personal favour; they are flattered by the attention,—rarely do they care for the pain which is inflicted,—chloroform is for them a superfluity.

A want of symmetry is occasionally noticed in the palate when there is no very marked absence of symmetry elsewhere.

I might also mention anomalies of the tonsils and the fauces, but these would have but little interest to you.

The gums are extremely prone to recede from the teeth, and to become tumid, as in the scorbutic condition.

The masticatory process is always performed with difficulty. The carious condition of the teeth is one cause of this, but it is principally due to the imperfection with which any voluntary act is performed. The sense of taste is obtuse, no medicine, however nauseous, is refused, and without care many will eat with indifference the most offensive garbage.

To sum up, we have in the condition of the mouths of idiots important data for distinguishing between idiocy of a congenital and that of a non-congenital origin, and to base thereon a prognosis as to relative improvement by treatment. They are, the thickness of the lower lip, the delay of dentition, the chronic inflammation of the gums and buccal mucous membrane; the height, angularity, and want of symmetry of the palatal vault; the long, corrugated, and coarsly-papulated tongue, and the hypersecretion of saliva. Common to the congenital and non-congenital cases we meet with defect of mastication, a want of co-ordination of the muscles of the tongue, and the slight development of the faculty of speech.

I am anxious to hear from the members of this Society their own experience with regard to any feeble-minded patients that may have come under their observation, and how far the picture I have drawn from nature contrasts with what they meet with in members of a sane community. It is quite possible that some of the characters I have noted may be met with sometimes among those who are doing their work in the world, and are among the bread-winners of society. My own experience leads

me to consider that they are exceptional cases. May not deformities be indicative of a slightly degenerative process? When investigating cretinism in the valleys of Piedmont, one is struck with the very gradual deterioration of the race. Some of the typical features of cretinism are met with among the grandparents who are doing part of the world's work, and we have been able to trace the increased degenerative stages through the children to the effete grandchildren.

I have often had a lingering wish to measure and note the condition of the mouths of some of the progenitors of my patients, and trace—as I believe in some instances one could trace—the gradual deterioration of the species till it culminated in congenital imbecility.

That is just the link that I have not been able to forge. I know no men more likely than those I have the honor to address to-night to be able to fill up, from their experience, the shortcomings of my own.

[*From the Philadelphia Medical Times.*]

ORIGIN OF FIBRIN.

P. Mantegazza (*Centralblatt*, No. 45), for the purpose of deciding some points in dispute in regard to the composition of the blood of the splenic vein, performed several experiments on dogs. In the majority of the experiments the blood of the splenic vein was found to contain more fibrin and fewer corpuscles than that of the jugular vein; but in almost as many instances the proportions of these substances were reversed, or the composition of the blood of the two veins was exactly the same. The spleens of three rabbits were excised; but the operation seemed to have no perceptible influence upon the amount of fibrin in the blood. The injection of a solution of urea into the blood of rabbits and dogs was followed by the disintegration of a large number of blood corpuscles, and, if the animal survived for some days after the operation, by a marked increase in the amount of fibrin—in one case nineteen parts in a thousand. Lactic acid was also injected into the blood of several animals. Its effects varied according to the amount injected and the concentration of the solution. They were also not the same when it was introduced into the peritoneal cavity as when it was injected into the veins. In the former case, peritonitis and entero-colitis

were the local results; and these may prove fatal. In both cases, congestion and inflammation of the lungs, inflammation of the kidneys and hæmaturia, as well as reddening and swelling of the endocardium, were produced, In the case of a dog, symptoms of articular rheumatism, with endocarditis and fever, were observed. Valvular lesions were never noticed. The blood corpuscles were diminished and the fibrin increased. In the blood of animals poisoned by lactic acid, clear bodies of different sizes, presenting in some cases a diameter of Imm., were seen. They were semi-transparent, and were composed of fibrin and white blood corpuscles. It is not improbable that these give rise to embolism, and, consequently, to inflamation of the lungs. Mantegazza has not observed any increase in the amount of fibrin in the blood of animals to which the induced current has been applied, or in which convulsions have been induced. The examination of the blood of persons who have died of tetanus has yielded the same result; and while in some cases the blood of parts subjected to violent movements has been found to show an increase of fibrin, in others it has contained less fibrin than the blood of parts at rest.

Mantegazza is of the opinion that the coagulation of the blood and of the coagulable fluids depends upon a condition of irritation of the white blood corpuscles, which, when in contact with foreign bodies of inflamed tissues, or when removed from their physiological influences, emit a substance which is either fibrin or is the substance from which fibrin is formed. The red blood corpuscles are not at all necessary to the formation of fibrin. Lymph and inflammatory serous effusions which do not contain them are capable of coagulation; but every coagulable liquid must contain the white blood-corpuscles, and will not coagulate when these are mechanically removed. Sussanas attributes the relatively greater amount of fibrin in the arterial blood than in the venous to the fact that just before the venous blood enters the heart it receives from the thoracic duct a large number of colorless blood corpuscles. In many conditions where an increase in the amount of fibrin is observed (pregnancy, digestion, the blood of the splenic vein), an excess of the white corpuscles may also be detected. And wherever in inflammation the white corpuscles accumulate, there fibrin will also be found.

Operative and Surgical Department.

[*From the New York Tribune.*]

DANGER OF ANÆSTHETICS.

Recent Cases of Death Under Anæsthesia—Some of the Cases During Last Year—To Whom it was Perilous—Dr. Curtiss' Opinion of its Universal Safety—Its Mental Effects.

[Continued from March Number.]

CAUSES OP DANGRR.

An able medical writer, in recently discussing the increasing mortality from chloroform, said that the rate was gretaer with this than with any other anæsthetic, but he added that every anæsthetic thus far discovered has had its victims. This writer argued that it was time for the medical profession to take into consideration, with as much accuracy as possible, two very important questions.

First—What conditions of the system—acquired or hereditary—and what peculiarities of the constitution, forbid the administration of the agent.

Second—By what mode, if any, can this or any other anæsthetic, be safely administered?

It would appear from collected facts that the heart, of all the organs, is the one most frequently assailed by the deadly influence of the anæsthetic poison. The lungs are next in frequency to yield to its toxicological action. In many cases the stomach, the brain and the tongue, by falling back, are the organs or parts first to receive the shock of the toxic properties of the anæsthetic. Dr. A. H. Smith, of this city, recently read a paper before the Medical Library and Journal Association, on "One of the Causes of Death from Chloroform," and he advanced the view that the serious results induced by this agent in some cases might be due to its local anæsthetic action upon the respiratory organs. Not only are the air cells exposed directly to the vapors, but the blood brought to the lungs is loaded with the anæsthetic. He thought that the effect of this double dose might

be to deaden the *beson de respirer*, that instinctive sensation which, analogous to the feelings of hunger and thirst, impels the reflex act of respiration. Dr. Richardson asserts that when "a weakened and dilated right side of the heart, with enlarged hemorrhoidal veins, varicose veins of the lower extremities, and large, full, yet tense veins in the lower part of the body," is met with, the administration of chloroform is hazardous in the extreme. Another contra-indicating condition is where the kidneys are diseased in certain ways; and still another is fatty degeneration of the heart, which is a condition hard to determine, for every sign and symptom of it may be absent while yet it exists. Hard drinkers, as a rule, should not be subjected to the anæsthesia of chloroform, for to them it has more than ordinary dangers. Many practitioners employ small quantities of chloroform, especially in obstetrical cases, to induce incomplete anæsthesia, hoping to alleviate pain without producing total insensibility. But experience proves that anæsthsia may be as dangerous when it is partial as when it is complete. To the obstetrician chloroform is invaluable, but it should be confined to cases imperatively demanding its employment.

Dr. Curtis, of Cincinnatti, has recently put forward some views on the administration of chloroform, in connection with the report of a death from its use. He holds that many surgeons are too hasty in putting persons under the anæsthetic influence. He himself determined to give chloroform very slowly, and urge large inhalations of atmospheric air. As patients seemed inclined to refuse full inspirations to avoid inhaling the chloroform, he gave it loosely through a silk handkerchief, and so slowly that from 15 to 30 minutes were required to prepare the patient for operation, never giving it fast enough to diminish sensibly the force or volume of the pulse, or to darken the color of the surface. He never gave more than was necessary to prevent sensation, pinching the surface to learn when this was accomplished, and renewing the inhalation during operation only when he found sensation returning. Soon after the introduction of chloroform into surgery, a Boston surgeon, while operating on a patient under its influence, discovered that the blood flowed very freely; but, as it was dark blood, he concluded that it was venous, and would not seriously affect the subject. Soon he

was alarmed by the sinking of the patient, who was only restored by strong stimulants and friction. The operator had given chloroform without the admixture of a quantity of atmospheric air sufficient to purify the blood of carbon; and hence, though he had wounded an artery, as he discovered by the irregular discharge, the blood was purple, instead of vermillion, as it should have been. The chloroform had been given too fast, excluding the oxygen of the atmosphere, as was evident by the dark color of the blood, the reduction of the force of the circulation, and the purple hue of the surface generally. This is a point to which great attention should be paid in the use of the anæsthetic agent.

The inhalation of chloroform is only a speedy method of making a person "dead drunk," and Dr. Curtis soon saw that if the anæsthethic state were brought on gradually, as intoxication generally is, and stopped as soon as sense and muscular motion are by taking alcoholic liquors, it produced no worse effect upon the system. In both cases the patient often vomits, both when taking the narcotic and when getting rid of it; and in both, insensibility to the severest operations may be produced. All the danger of one over the other is that, in the use of the chloroform, the operators injudiciously ply the agent too fast, and do not stop when the patient has enough. By taking proper care in regard to these things, Dr. Curtis says that operations may safely be performed on very small children and very old persons; on those whose lungs or hearts are diseased, or who are much reduced by chronic ailments of various kinds.

In closing these notes, attention may be called to a singular effect which chloroform has upon some persons. This is its dulling the brain and destroying the intellectual faculties for months after the period at which it has been taken, and after physical health has been restored. One gentleman of active mind, a ready thinker, and a fluent writer, might be named who has been under the influence of chloroform three or four times for surgical purposes, and after each time his intellect has been torpid for months, though his surgical recovery was rapid.

PLUGGING TEETH---A FAILURE.

By W. E. Driscoll.

The cavities were in posterior proximal surface of first left inferior molar, and in the anterior proximal surface of the second,—that is, they were facing each other. Pulp devitalized in the first, and exposed in the second. Had a very flaring V shaped separation that had been made before coming to me. My failure to make gold fillings was due to my inability to insert a wedge low enough to cut off moisture at the cervical edges of the cavities. The lowest point of the decay being full one-fourth of an inch below the edges of the alveolus on each side. The proximal surfaces were beveled off so much that a wedge could not be fastened between them that did not cut off approach to the bottom of the cavities. I fastened the rubber dam in every way I could think of, but could not exclude the saliva and blood sufficiently to fill. I then tried packing bibulous paper under the tongue and the compress to hold it down, and placed paper to absorb the saliva from the ducts of steno. But before a third of the work was done all was overflowed. After taking out the gold, and preparing some amalgam, I was able to keep the cavities dry until I could plaster them up. What should I have done to have brought success instead of failure?

ANSWER.

By Henry S. Chase.

The treatment of the following case will answer the above, I think:

Mrs. B., March 14th, called to have the right under first molar plugged. The pulp has been removed and the roots filled. The whole of the anterior proximate wall, and the antero lingual wall was absent, not only of the crown, but of the neck of the tooth; so that the gum between the second bicuspid and the former stood high above, and formed a soft wall for the cavity.

I cut away the gum down to the alveolar wall; syringed and cauterized the parts. The cavity sloped downward from the pulp cavity to the alveolar wall. Formed the cavity to make a contour plug, by restoring the walls. The lingual wall sloped

from the posterior lingual cusp gradually down to the antero lingual angle, and was then lost under the gum.

I thought this a hard case, but I tried and succeeded perfectly in going on, without getting the parts wet, and making a contour plug very satisfactory to both parties. I closed the ducts of steno with pieces of spunk and a spring compressor; closed the subligual ducts with a piece of spunk cut to fit the floor of the mouth, with a slit in the spunk for the string of the tongue.

The mouth now being *dry*, I wiped out the cavity and surrounding parts. A cylinder of unadhesive foil, tightly wound, and of the diameter of No. 12 of the guage plate, and a little longer than diameter of the molar, is taken and laid between the molar and bicuspid, so that one end has a buccal surface, and the other end a lingual one. The cylinder is carefully crowded down by hand pressure between the teeth. A cylinder of considerable larger diameter is now taken and placed as before.

I commence in the pulp cavity, and use adhesive foil, using No. 20 or 30 in strips, in alternation with William's No. 2 adhesive cylinders; building a firm floor, and keeping the posterior part higher than the anterior all the time. The gold is thus carried down over those *cross laid* soft cylinders until they are fastened down by the floor. The operation is continued thus until the anterior proximate wall rises to a little above the level of the gum.

The mouth is dry as yet. If it was much wet I should change the pieces of spunk. But while they are still in place, I put on the rubber dam. Of course it can go no further than the gold will allow it between the teeth. But I *trim* the gold a little, so that the dam will fit pretty well *now*. Of course it would leak if I took the compressors away. They are left until I build up the plug still higher. The plug being dry, I build on gold at the anterior proximate border, pushing the dam a little out of the way, as I add each pellet.

I use No. 1 and No. 2, William's cylinders; annealed as they are used. Being of regular shape, the dam is pushed aside by them with facility, as they are malleted down to their place. The dam is secured also by gold holding it down in place. As soon as gold enough is added to prevent leakage, I remove the compressors, which have been in place about half an hour. In

all cases of proximate cavities, where they go down to the gum or below it, cylinders can be used to very great advantage.

RAHWAY, N. J., March 28, 1872.

To the Missouri Dental Journal:

I have here, I believe, a rather an unusual occurrence. At least I have seen but very few notices in the dental journals of cases in practice of this kind. If it is worth saving and mentioning to the profession, you will be the best judge. If not, consign this to the waste basket, and the tooth to the ash heap. The facts are these:

Mr. ———, of Woodbridge, N. J., came into my office some days since, and wanted me to examine his mouth, as he had some kind of a hard substance protruding from the gum in the back part of the mouth. He would have said nothing about it, I suppose, but he had been wearing a plate some time (every tooth in upper jaw being out). He let it fall on the floor and split it in half, and wanted a new plate. Consequently he wanted to know what the hard substance was, and have it removed or remedied in some way. He thought it was an old remaining root. I took him in the operating chair, threw a good light in his mouth, by which I was enabled to see that it was a good sound tooth of the third dentition. It was about in the place where the second left superior molar should have been, lying almost horizontal with the gum. It was always a source of trouble and pain to him, so I concluded to extract it. There was not much to be seen, or to get hold of to extract. But I took it out all right, with a good deal of groaning on his part. You can see that it has not much root, but it was very painful, indeed, extracting. The man is forty-five years of age, well and hearty, and had not another tooth in his upper jaw.

Truly yours,

J. C. HANKS, Box 434.

EDITORIAL REMARKS.—Dr. Hanks sends the tooth with the above. It has the appearance of a third upper molar of the second dentition. May not this be its anatomical and physiological character. Not erupting at the usual age, it may have remained in its socket until the molars anterior to it were extracted, and then moved forward into a mal position. The

alveolar processes becoming absorbed followed by the gums, the tooth at last made its appearance.—[CHASE.

REMOVING INFERIOR MOLARS.

I desire to mention through the JOURNAL, a method I have of removing inferior molars, when the roots spread gradually from the neck downward, so much as not to admit them between the adjacent teeth in extraction. The reader has, no doubt, met with cases, in which, after breaking the immediate attachment, and endeavored to raise the tooth from the socket, it would wedge as above indicated. By exerting force laterally, there is danger of fracture of the alveolar process, more than is warranted, besides making a very unenviable impression upon the patient. Splitting is resorted to by many, but this is severe, especially when a tooth retains much of its integrity, and an operation to which the sufferer does not like to submit.

An iron-jawed gentleman presented himself several years ago for the extraction of the first right inferior molar. I pulled away at it, right and left, manfully; broke it loose, but could not remove it in consequence of the difficulty of which I have mentioned. I tried the splitting process, but this was abandoned at *his suggestion.*

It then occurred to me to take a small French saw, like that which any dentist has in his laboratory, and saw off one of the roots, which I did, with no pain to patient except that incident to previous attempt, and gratification to us both, at its easy removal thereafter.

Since then I have had occasion to resort to this several times with like success.

CHICAGO, April 3, 1872. SMITH.

A CASE.

A young lady about twenty years of age; teeth irregular; right central and laterals overlapping sufficiently to make their incising edges very uneven. Patient had suffered from severe pain in left central for three days and nights. The tooth had a

small decay on the distal surface, rather deep. There was what appeared to be a fistulous opening over the root about a quarter of an inch above the margin of the gum, which, with the color, which was but the least shade darker than the other, we took the liberty of drilling from the palatine surface to the pulpy canal, where we found no pus, and no well-defined pulp. Succeeded in passing an exploring broach up about three quarters of an inch, though a very painful operation. Then a barbed broach about the same distance, gave a rotation, and from patient's symptoms, we thought we "had him." Continuing a gentle pressure we discovered the mucous membrane moving in the vicinity of where the apex of the root ought to be, we concluded that we had made a miscalculation of that tooth; removed the broach with some difficulty, and called in the neighbors. Subsequent examinations revealed that about the anterior half of the root, from the enamel upwards, was gone, and the nervous tissues laying against the posterior half and extending down into the crown. After pressing the gum away with cotton for twenty-four hours, we succeeded in filling the pulp canal of the crown, driving a cone of gold from the top into what was the apicial foramen and filling from the palatine orifice with oxychloride. Will some of the Oracles say on?

WM. N. M.

CASES IN PRACTICE---ALVEOLAR ABSORPTION AND CONSEQUENT DENUDATION.

This complaint as recognized in the list of diseases demanding treatment at the hands of the Dental Surgeon, forms one of no mean limit, evidently choosing as victims, those who fully observe proper sanitary rules necessary to their welfare, as well as the more careless. This fact, in addition to the indurate obstinacy so often attending cases, proves to the mind of that operator having a true regard for both profession and patient, a painful realization. Through the instrumentality of the presence of this disease, and the want of foresight upon the part of too many dentists, thousands of teeth are thus annually sacrificed, which might by proper therapeutical treatment, prove far more serviceable than the most superior artificial substitute.

But a few days since we were requested to extract an entire lower set of teeth—the whole number free from decay. The only fault found was the gums bled more or less daily, and a keen sensation perceptable when the finger-nail, or cold fluids came in contact at their necks, also an absorption of the labial margins of the incisors, some three lines in depth. Not deeming the case a justifiable one for extraction, of course the request met with a refusal on our part. The patient left our office declaring us of "stupidity stubborned," at the same time adding "she knew where she could get them extracted if we would not do it." It is needless to state her teeth were extracted elsewhere. We have been too often censured on account of our obstinacy in the slaughter of these most valuable accessories, when a few of them were minus a part of the osseous or gingival tissue at their labial or buccal margins, but since receiving the degree of our Alma Mater we resolved on one fixed purpose, and of this hobby we shall yet continue to ride it for some time to come. By a large class of practitioners this complaint is regarded as incurable, though such persons are willing to agree that great good is accomplished by local washes, etc., but arguing to the effect that such a course proves but temporary, which really is true, in a great many cases, even under the care of the most able peers of our profession. We do not go our whole upon the declaration that there are thousands of cases that are amenable to treatment, and which are sacrificed, owing to the carelessness and want of judgment on the part of the operator. Another claim of ours is, that when one half or more of the gingival tissue still retains its hold upon the teeth, the case deserves treatment at our hands and should not be extracted. Some six months since we treated a case when three superior molars were affected. The first anterior left molar, also the first and second of the right. The palatine fang of the former was exposed to its apex. The buccal portions unaffected. The anterior fangs of both of the latter were ditto about one half of their length; the patient suffering considerable from this first left molar, I depleted the edges of the gum, also with my narrow sharp-pointed bistoury clipped the nerve, and applied tincture acconite and arnica. A few days afterward called again, and complaining. I devitalized the nerve and afterward excised

the palatine fang, and filled the remaining fangs, as well as the orifice produced in reaching fang canals, preferring this method to Dr. Allports', in this case. The remaining two affected of the right side, treated as usual.

Suffice it to say, that the teeth are doing well to this day. This case is the more interesting as the patient requested all three of the affected teeth extracted; but now feels doubly pleased at the result, and declares that dental science possesses virtues of the most exalted character.

Could we only secure our patients at the first inception of the disease, but little trouble would be experienced in its cure. At least, we can inform them of the danger of its presence, or advise the necessary rules to be observed rigidly, when it has attacked. But as a general rule we are too careless in its observation at its first inception; the disease has made considerable progress ere we discover it.

It may be argued by some that an utter impossibility exists in the cure of this disease, even when the powers of assimulation and self-maintenance are at their full height. We claim that disintegration of the osseous tissue does not occur in a true sense of the term, only a slight absorption of the marginal edges of the parts affected, and though a sponginess of the soft tissue may be present, yet by the removal of the foreign deposit the gums assume their wonted shape and position. We are in the habit of co-operating with the family physician where the case presents a syphiloid character, or mercurialization predominates; as our practical experience increases, so multiplies our inward conviction that the constitutional applications should form the first basis of treatment. Local, but secondary, without the first, the second proves futile.

In those cases where the gums exhibit a leaden or blueish tinge, also, when pressure is applied to the plate of the maxilla, pus oozes freely. We claim—though the gum may remain intact yet, our carbolic wash, or nitrate of silver, or the different tinctures, applied with our pencil brush down to the very bone, will but yield a temporary issue. With our detergents and anodynes we may relieve our patient from much pain and soreness, yet the great desideration remains unaccomplished. The

fame of the physicians bases itself not on mere relief, but on entire cure. BREMER.

CHILLICOTHE, Mo.

NEW ORLEANS, March 29, 1872.

Editors of the Missouri Dental Journal:

In Vol. IV, No. 2, of your journal, I notice an article entitled "Dead Bones," by Henry S. Chase, one of the editors of the Operative and Surgical Department. [Reprinted in this No. ED.] The article refers to a paper written by Prof. S. P. Cutler, published in the January No. of the *American Journal of Dental Science* on "Ossified Pulps."

I know that Professor Cutler is quite capable of taking care of himself, and defending positions assumed in any of his writings, but you will, no doubt, allow me, through the pages of your interesting and valuable journal, to offer one or two suggestions on the article on "Dead Bones," by Dr. Chase. He criticises Prof. Cutler for speaking of a tooth which has no live pulp in it, as a *dead tooth.*

In speaking, or rather writing in that way Prof. Cutler followed a custom which is very common among dentists.

I have heard him in papers read before dental associations, and in lectures to students, explain that a tooth cannot be regarded strictly as a *dead* tooth until it is deprived not only of the vitality of its pulp, but also of that low degree of vitality, and the nourishment maintained through the medium of the alveolo-dental periosteum, by the death of the last named tissue.

Any one who knows Prof. Cutler will credit him with understanding these distinctions as well as any living man.

In regard to the statement of the circulation and cementum of the root *after* the death of the pulp, as given in the article of Dr. Chase, I am glad if he knows it to be so, for I had supposed there was no proof of such circulation under the circumstances mentioned.

But the part of the article on "Dead Bones," to which I wish now especially to refer is the statement that "the roots of childrens' temporary teeth which have had their pulps destroyed and removed, are perfectly absorbed in due time to make place

for the permanent teeth." Further and closer observation may lead Dr. Chase to a different conclusion. Admitting that the devitalized deciduous teeth when extracted show unmistakable evidence of considerable absorption of their roots, it does not prove that this process was not effected previous to the devitalization of the pulp.

I would point to the well known persistence of the roots of the temporary teeth after the destruction of the vitality of the pulp, making them offer such obstruction to the tooth of replacement as often to cause it to stand within, or without that part of the dental arch which it should occupy. Sometimes they become wedged between the crowns of two permanent teeth and remain absorbed—that process having evidently been discontinued with the loss of vitality.

I feel sure that any one who has paid much careful attention to this subject cannot have failed to have observed that devitalized teeth of the temporary set are through a failure of their roots to undergo absorption very frequently in the way of their successors.

Few authors of works on the teeth, and dentistry, have said very much on the matter of the absorption of the roots of deciduous teeth, but if any one will look at Tome's *Dental Physiology*, page 115, he will find that according to the expressed views of that careful writer and investigator, the life of the pulp is an essential circumstance to the progress of this wonderfully interesting "retrograde physiological action."

Very Truly Yours,
JAS. S. KNAPP, D. D. S.

"DEAD BONES."

BY HENRY S. CHASE.

In an article on ossified pulps in the American Journal for January, page 389, Dr. S. P. Cutler says: * * * * "So long as a tooth has a live pulp in it. After the death of this important tissue we are dealing with not exactly dead men's bones, but with dead bones themselves."

I most certainly disagree with the Professor in this statement. A tooth is not necessarily dead, when the *pulp* is dead, or extir-

pated. On the contrary, it is a living member of the body as long as its periosteum or pericementum is alive. Circulation of blood plasma takes place in the cementum of the root, and undoubtedly more or less in the dentine of the crown. It certainly does in the dentine of the root, for otherwise absorption of the roots of teeth could not be effected. A *dead* bone or tooth cannot be differentiated into connective tissue cells, any more than a splinter or bullet can be, and yet the roots of childrens' temporary teeth, which have had their pulps destroyed and removed, are perfectly absorbed in due time to make place for the permanent tooth. Of course, death of a pulp is sometimes the cause of inflammation, and death of the periosteum, and in such a case nature makes efforts to throw off the whole organ. I have often known pain to be produced in cutting the dentine of the interior of a root, from which the pulp had been absent several years, and the pain was of the same character which is produced in cutting sensitive dentine of a crown in which there is a living pulp.

ANÆSTHETICS.

By Walter Cabs, M. D.

The dissertation was made by Dr. Cabs, and read before the West Virginia Medical Society in 1871, and afterward printed in pamphlet form.

It states that nitrous oxide gas is the safest Anæsthetic, but as it is cumbersome, and inconvenient, and expensive, is not fitted for general use; discusses the relative value of bichloride of mythelin, chloroform, ether, &c., but fails to state that Wells was the inventor of anæsthetics because there are "wrangles over the question of priority of discovery," &c. The statistics gathered up in relation to the percentage of death produced by the different anæsthetics is one of some interest.

J.

HOW TO REMOVE AN AMALGAM FILLING?

Every dentist knows that this is a most difficult thing to accomplish. Every few months is is heralded through the dental papers that a drop of mercury will do the business for them.

But as several months is not sufficient for that purpose, it is reasonable to suppose that some would prefer a more prompt agent. We have thought that many old amalgam fillings might have been removed, and gold substituted, were it not for the dreaded difficulty of getting them out. One who has never tried the Scranton drill for this purpose will be surprised at its efficiency. I would keep them for that purpose alone, but they are far superior to bur drills almost anywhere that a large amount of drilling must be done in the easiest manner and shortest time.

W. E. DRISCOLL.

Mechanical and Miscellaneous DEPARTMENT.

DENTAL PERIODICAL LITERATURE.

"THE MISSOURI DENTAL JOURNAL for January contains an article by Prof. Judd, "editor of the scientific department," from which we quote the following:

"It is not a very favorable commentary upon the profession to say that it does not probably support to-day a single dental periodical in this country. The current periodical literature of the profession is at this day supported to a great extent by those who have something to sell to practitioners, and can therefore afford to publish journals for the sake of the advertising it allows them to do.

"That is to say, we buy our teeth, gold foil, amalgam, forceps, excavators, and current literature, at the same shop and of the same parties.

"When this is not the case, the deficit is made up by the editors, who, of course, do the necessary labor for nothing. We do not complain of this, as we excepted the labor with a full understanding of all these things; but we allude to it now only to predict that this will some day be materially changed."

"To which we reply, then "it is not a very favorable commentary" upon the professional, scientific, and business public, "that it does not probably support to-day a single" medical, pharmaceutical, scientific, or commercial periodical. "The current periodical literature" of every variety "is at this day supported to a great extent, by those who have something to sell." In other words, it is a fact, favorable or otherwise, that there is scarcely a periodical published in the country that is supported

entirely by its subscription list, independent of its advertising pages. Wherein, then, is the commentary unfavorable that a dental journal relies for its support in part upon its advertisements, and wherein is the difference, in the status and value of the journal, whether those advertising pages are used by the publisher, or by the general public, or by both, especially if the advertisements have relation to the needs of the profession to which it is devoted? The question is not, *where* is the literature of the profession purchased, but *what is its character?* If the manufacturer of dental requisites, by liberal remuneration to editors, can produce a better journal than one whose editors "make up the deficit" by doing "the necessary labor for nothing," what cause is that of unfavorable comment upon those who recognize its value? The truth is, the field is, as it should be, open to all; and whether "teeth, gold foil, amalgam, forceps, excavators, or current literature" be sought, purchasers desire to procure the best, whether it emanates from a "shop" or a college, and there is no justification for unfavorable comment upon their choice.

"There is occasion, however, for unfavorable comment on the fact that so few of the profession are subscribers to *any* dental journal; and the inference is irresistible that the fault is not so much in the journals, as in the indisposition of a majority of practitioners to read the current literature of their calling. The best men in the profession are more likely to subscribe to two or three journals than to fail to take any. A majority of those who are not subscribers to any periodical devoted to their specialty would not be likely to read one if gratuitously sent. How to make the journals more useful to those who do subscribe for and read them, and how to stimulate the rest to a better appreciation of them,—these be the objects of our endeavor. Whoever conrtibutes toward the accomplishment of this result, bid him God speed."

We copy the above from the editorial of the *Cosmos* for March, 1872. The writer says that "the current literature of every variety is at this day supported to a great extent, by those who have something to sell, and would therefore intimate that our dental literature is upon the same footing in this respect, as the literature of other professions. Now it was not the simple

declaration in our article in the MISSOURI DENTAL JOURNAL that "the current periodical literature of the profession is at this day supported to a great extent, by those who have something to sell to practitioners," that so seriously disturbed the equanimity of the *Cosmos*, but it was the last half of the paragraph, which states in substance, that our dental literature is also, for the most part, published by those who can afford—and we might have added—and *do* publish journals for the sake of the advertising it allows them to do.

That this was the understanding of the *Cosmos* editor, is evident from the question which he asks, "wherein is the difference in the status and value of the journal; whether those advertising pages are used by the publisher or by the general public."

There was no misapprehension then in the mind of the editorial department of the *Cosmos* upon this subject, and it was plainly understood that we intended to indicate that it was not very creditable to the profession that its literature was supported, and consequently controlled to a great extent, by the advertising publishers of the journals. Now that the medical literature of the country occupies a similar position, we totally deny. In order to make a parallel case we must have a medical literature published and controlled by druggists, and dealers in surgical instruments and appliances, and all of the paraphernalia which are required for the outfit and use of surgical and medical practitioners, and the advertising of these goods must, also, to a considerable extent, recompense the publisher for the expense and trouble of its publication. It is needless to state, that our general medical literature is not furnished in this way.

But suppose for a moment—for the sake of illustrating a principle of action involved—that the state of things figured above really did exist. A dealer who has a journal under his control has become interested, through the representations of some inventor, in an improved patent self-adjusting splint, which he is confident will be in great demand, and invests heavily in the article. Subsequently the splint is proved to be worthless. Is it probable that the dealer who has a heavy stock of the splints on hand, would allow the journal under his control to expose the worthlessness of the article for the benefit of the profession,

or would it accord rather with the business tact of a money-making tradesman to make every effort to rid himself of his goods, and would he not for this purpose make free use of the advertising pages of his journal? But, as we have before stated, this is not the status of the medical literature of this day, no! The medical literature of the day, is, to a considerable extent, a *free* literature.

The advertising pages of our medical journals are, as a general thing, open to all proper advertisements. It is undoubtedly a convenience to the dentist or physician to find advertisements and information relative to the materials which he may need in his practice, in the journals.

We have not intimated that the practice derogated in any degree from the freedom of medical or dental literature. But let us see "wherein is the difference * * * whether those advertising pages are used by the publisher, or the general public." Suppose the publisher and owner of the journal has expended a large amount of time and money in bringing out a chair which he advertises and sells for $175. Some other more fortunate inventor has produced a better chair which he is willing to sell for $125. If the journal which the dentist takes and pays for, was a free journal with equal opportunities afforded to all advertisers, he would at once be acquainted with the merits of the latest and more valuable invention, and would, consequently, save $50 in money if he wanted to purchase one. These special advertising sheets do not advertise goods for other dealers which come in competition with their own.

But again, the *Cosmos* says: "If the manufacturers of dental requisites, by liberal remuneration to editors can produce a better journal than one whose editors make up the deficit by doing the necessary labor for nothing, what cause is that for unfavorable comment upon those who recognize its value?"

Now, we have no objection to make to the publication of dental journals by manufacturers or dealers who can afford to remunerate liberally the editors of the same, and we have no doubt but that by owning the journals and *editors*, these manufacturers or dealers can make a more *valuable* journal, so far as the subservience of their own interests is concerned, than one

published solely for the good of the profession; but we nevertheless insist upon it that the profession shall thoroughly understand the natural and almost inevitable effect of such controlling influences.

For the sake of illustration we will suppose that the owner of a journal was largely interested in the sale of a new base for artificial teeth, and that his profits from this traffic were large. The base was extensively and extravagantly advertised, and circumstances existed which made it very desirable for practitioners to resort to this base, as a substitute for other bases which had hitherto been extensively used, but which they now very much desired to abandon. All of these circumstances conspire to make the demand great. The situation is such as a shrewd tradesman would be apt to improve to the utmost. Would his own journal and editor, which he supports, for the purpose of extending his business, be apt to warn the practitioner that perhaps the extravagant encomiums lavished upon the new base, mostly by those who are interested in its manufacture and sale, may not prove to be reliable? And would not the practitioner who had been influenced to invest in, and use the new materials, if it should prove worthless, be apt to conclude that if a "manufacturer of dental requisites can produce a better journal," &c., than others, it might not after all be *better* so far as the interests of the profession are concerned. Every one will recognize, and I presume, acknowledge, the truthfulness of this representation of what would naturally take place under the circumstances named. But it will be objected, perhaps, that those dealers who publish journals are too honest, upright and honorable, to deceive their customers as to the merits of the articles they sell. We would not for a moment, intimate that they are not honorable business men, but we only call attention to the fact, that it is their business to supply the demands of their customers, and they would be more than common mortals if they took special pains to lessen in any way a demand for goods, from the sale of which they were reaping a rich harvest.

Their avocation is to make money by trade and it is not their business to maintain the honor, sustain the dignity, and guard the interests of the dental profession, all of which are to a great

extent, bound up and inseparably connected with our dental literature.

But it may be objected again, that the editors of those journals belonging to the profession, and having interests in common with other practitioners, will give tone and direction to the literature even if they have no control over the advertising department.

This has no doubt been true in may cases, but then editors who are the subjects of "liberal remuneration" from the owners are not exactly free to act in all cases.

Those who have well-earned reputations to sustain, can not, perhaps, be influenced to depart from a conscientious course, but such an editor could easily be *influenced* to resign, and his place could also, easily be filled by some one who, having no reputation to lose, would be willing to be more pliant, and more easily controlled, or what would be more effectual still, the editorial department might be *impersonal* and the name of no responsible editor appear.

The tendency in all cases is to a complete control by those who alone have the right to control them, and who would be more than mortal if they did not control them for their own interests rather than for the sole interest of the profession.

We wish it distinctly understood, that we have discussed in this article, and partially elucidated principles which underlie the very foundation of our periodical literature. We have no desire to detract one particle from the the well-earned reputation of any of our periodicals, and we would most gladly increase four-fold the circulation of each were it in our power so to do, for they have all done much towards enlightening the profession, and are now doing much in that direction, but we desire the profession to fully understand that our literature, is for the most part unique, that it has no parallel in the literature of any other profession, and we still believe that the future will demand a literature which shall be to the dental, what our medical literature for the most part, now is to the medical profession—one that shall be produced, and controlled, and chiefly supported by the dental profession. J.

A NEW METHOD FOR FITTING BANDS AND CLASPS TO TEETH.

In "regulating cases," having at times found it extremely difficult to *perfectly* fit a band to a tooth, which I desired to twist, it occurred to me that the difficulty could be overcome in the manner which I will describe, and which I have since found of great advantage, saving time and patience, and giving a more accurate adaptation than could be obtained by any other method with which I am acquainted.

I take an impression of the tooth, from which I get a plaster model; around this I wind a fine platinum wire, one coil above the other, until a band of sufficient width is formed. Over this, and while yet on the plaster model, flow gold solder, and you will have a perfect fitting band. Attach your catches at whatever points on the band you wish to apply your force, by soldering on a small piece of plate, or in any manner the case may suggest to your mind as the best.

Clasps can be perfectly fitted to teeth in this manner, using heavier wire and twenty *karet* gold for solder, cutting the band so as to clasp the tooth in the proper manner.

A. H. FULLER, D. D. S.

JOURNALISTIC.

In the *Boston Medical and Surgical Journal,* we find "A Case of Malpractice" detailed. The radial artery was cut by accident, and a physician being called, proceeded to arrest the hemorrhage by ligating the wrist instead of the artery. Mortification ensued, and amputation of the forearm was required to save the patient's life.

In the *Druggists' Circular* we find a record of experiments, by Richard V. Tuson, Professor of Chemistry in the Royal Veterinary College, by which it seems that mineral substances are digested in gastric juice mixed with two per cent. of hydrochloric acid. At least this is true of calomel, but neither gastric juice nor hydrochloric acid alone will dissolve it, and consequently the digestion of calomel, so far as its solution in artificial gastric juice is concerned, is brought about under the same conditions as that of the albuminoids.

We also observe in the *Druggists' Circular* an article from the *Polytechnic Journal,* which states that a new method of "Nickel-Plating" has been invented, so that the price will finally be much more reasonable than at present. Nickel-plating, if properly done, is invaluable to the dental fraternity. Establishments can be found in most of the Eastern cities where a dozen pairs of forceps can be protected in this way from rust most effectually for a small amount of money, and for pluggers it answers an exceedingly valuable purpose. We are daily using a set of pluggers which were nickel plated more than two years ago, and which now look almost as bright and cleanly as when it was first done.

In the *American Eclectic Medical Review,* it is stated that a bill has passed the Illinois Legislature designed to regulate the practice of Medicine and Surgery in that State, and under the heading of a "Vexed Question" is discussed at considerable length some of the provisions of the bill now pending before the New York Legislature for the same purpose. We do not propose to discuss the general features of the bill, but a single feature strikes our attention which it is well to notice, viz: "While diplomas from medical colleges, and from authorized boards of censors are, *if they be genuine,* received by this bill as evidence of adequate preparation for practice, still the provisions of the bill do necessarily empower the censors to go behind the mere diploma and inquire into the manner it has been obtained."

It is encouraging to note this phase of public opinion which is slowly gaining a foothold in communities, and which would estimate the value of a diploma by the method in which it was obtained.

These acts in some form for the regulation of the practice of medicine, surgery, and dentistry, are inevitable, and we predict that in the future it may be of some consequence to the holders of diplomas to be able to show a clear record as to how they have been obtained, and it may even make some difference whether they are obtained from a "Shop or a College." That there is opposition to the passage of this bill by some of the old fogies of the profession is not surprising.

Let it however be understood that these bills are not for the protection of the professions, but for the protection of the people against the most unprincipled set of swindlers that can be found outside of the walls of a penitentiary, and then let these inhibiting laws be tinctured with the common sense that is usually exhibited in the passage of laws upon other subjects, and they will undoubtedly do some good.

The *Dental Register* for March has an article by C. R. Taft, D. D. S., upon "Filling Teeth," which for the most part is practical and sensible, and although there may not be anything absolutely new in it, a constant recurrence to the important principles involved in this operation, and to the various methods of practice in vogue, is always apropos in our dental literature.

After speaking of the necessity of so opening the cavity that "every portion" of the border may be distinctly seen," and stating that the edges should be trimmed down until strong, smooth and regular borders are secured, and that sufficient under cutting or retaining points at opposite sides, etc., he says: "Adhesive gold should always be used when the best results are aimed at, and this thoroughly consolidated with a leaden mallet."

This is rather positive, and we have no doubt but that in certain localities non-adhesive gold in the hands of a skillful operator will produce quite as good results, and the leaden mallet is by no means a *sine qua non* in the operation. We confess to a *penchant* for a steel mallet in preference to all others, but we will not insist that a steel mallet is an absolute necessity in this operation.

He next very properly condemns the practice of "hastily cramming the cavity," &c.; advocates contour filling in all cases, and recommends the rubber dam, both while excavating the cavity and packing the gold. He recommends wedges for obtaining space for operating upon proximal surfaces, and if sufficient room cannot be obtained in this way, cuts away the enamel for that purpose.

If the pulp would be uncovered by removing all softened dentine immediately over it, would leave a small portion of the softened tooth substance, which he would saturate with creosote before filling with gold.

He commences his fillings in small retaining points at the base, and packs carefully and slowly from the foundation till it is completed.

Uses heavy gold, ranging from 60 to 120.

The author takes special pains to say again that soft foil should seldom or never be used in filling teeth.

We have long since placed our views on record upon this subject, and we have no doubt but that in a vast majority of cases adhesive foil is best adapted to the purposes of filling teeth, but as there is at least one Dental College in the United States, where, I think I am not mistaken in asserting, soft foil is recommended for that purpose, I should not feel like condemning its use so strongly. It is certain that I have seen fillings made of soft foil that were second to none in beauty and usefulness, but as we indicated above, these could be inserted only under favoring circumstances. But he proceeds next to describe the method of filling a posterior proximal cavity of a molar. He first drives in a wedge, then cuts down from the grinding surface, and cuts away sufficiently to expose to view the whole cavity, cuts a grove and retaining points at the bottom of cavity, and dovetails at the top, or sinks a pit in the crown anteriorly to the upper portion of the cavity; next fits in keys, as he calls them, made by cutting off the smooth part of a separating file, and bending it as may be desired with a pair of pliers. This is passed down behind the cavity between the teeth, and kept in place in close proximity with the cavity to be filled by driving a wedge between the key and the tooth behind it.

This the reader will observe is the practice recommended so strongly by Louis Jack in the *Cosmos*. He calls the steel slips matrices instead of keys, a somewhat more formidable name than the latter. These pieces of steel have been used more or less for this purpose for many years. We have tried them lately, and had tried them somewhat long years ago, and in our hands the pieces of separating file seems to answer every purpose that the "matrix" does in this location. We would by no means wish to be understood as discouraging their use, for the simple fact that they have been used more or less for many years without coming into general use, is no argument against them. We hope to hear more of them from different operators, and es-

pecially from those who have no interest in them aside from the general need of the profession.

The testimony of the author as to their usefulness is unequivically in their favor. He then commences his filling in the retaining points at the bottom of the cavity, and builds it up firmly against the key which makes the posterior portion of the plug so smooth that it requires very little finishing. He closes his article by alluding to "that dark visaged imp, Amalgam," which he treats however with more leniency than we would have expected after seeing the cognomen with which he designates it. We have given so much space to this article because it treats of subjects of interest to every practitioner in the profession.

In the report of the proceedings of the Ohio State Dental Society, Dr. Heriot stated, in substance, that in Ohio a great deal more money was paid for mechanical than for surgical or operative dentistry. We have no reason to dispute this statement, and we do not know but that the statement could be made with equal truth of every State of the Union.

In St. Louis, however, we think we would be safe in affirming that the aggregate amount of money paid for plate work in the offices of all of the reputable practitioners in the city is not more than one-fifth of the amount paid in those offices for operative dentistry. If we were not fearful of disturbing the equanimity of some tooth manufacturer or dealer, we might be led to suggest that this statement of Dr. Heriot's in relation to the proportion of mechanical to operative dentistry exhibits a state of things that is not very creditable to the intelligence of the communities where it exists, and we might add that the profession itself is also doubtless somewhat to blame, being to a certain extent responsible for a public opinion which tolerates such a wholesale destruction of the dental organs.

The *Cosmos* commences an article upon Dental Pathology and Therapeutics, by J. Foster Flagg, of Philadelphia. As there is in this number only a few introductory remarks, we are as yet unable to collect anything that will interest our readers, but as it is to be continued through succeeding numbers, we are in hopes that we shall be enabled to glean something of real interest for our Journalistic view.

Dr. O. A. Jarvis, of New York, objects to Dr. Arthur's method for the prevention of decay in teeth, in an article which shows some of the weakest points in Dr. Arthur's work. One of these is found in cases where the teeth are so shaped that if separated to any reasonable degree, no shoulder can be left to keep them apart, &c. The attempt to apply this treatment to every conceivable case will doubtless prove fruitless. But that there is much to stimulate thought and action in the direction of hygienic effort, cannot be denied.

Dr. Relycia, of Bellville, Canada, reports seven cases in which he had extracted and replanted teeth for alveolar abscess in the last year, four of which were successful.

Dr. George S. Fouke, of Maryland, makes a careful estimate of the lowest charges that can be made, and still allow the dentist a fair profit for plates of teeth, and for gold fillings. He comes to the conclusion that for ten teeth or more, he ought to receive *twenty dollars*, and for gold fillings at least $2.25 each.

S. G. Robertson, of Georgia, prefers Hill's Stopping to oxychloride for capping nerves, but as he states in the same article that nerves capped with lead give better results than when capped with oxychloride, we are led to place but little reliance upon whatever else he may advance in relation to this subject.

Dr. Kingsbury, of Philadelphia, in a paper read before the Odontological Society of Pennsylvania, condemns the use of arsenic for sensitive dentine. J.

BROOKLYN, April 5th, 1872.
133 Pacific street.

PROF. JUDD, *Dear Sir*:—Will you permit me, at this late day, to say a few words in reference to the article in the February No. of the "JOURNAL," entitled the "Cummings Patent," which does great injustice to the dentists of New York and Brooklyn. The facts in what Mr. S. S. White calls "this painful case"—see *Cosmos*, Feb. No., page 116—are these: The executive committee of the dentists of New York and Brooklyn, have been the real defendants in the case, Gardner having agreed with them, *in writing*, not to withdraw, settle, or in any way compromise the suit without their consent, in consideration that they would pay all the expenses of the suit in the United States Supreme

Court at Wasington. This committee have done all the work, and the dentists of the two cities have paid all the expenses, except one hundred dollars from St. Louis, and fifty dollars from S. S. White. The dentists of Baltimore retained and paid Mr. Harwitz, of that city, as associate counsel with Mr. Foster, he having been accepted by the New York and Brooklyn committee. And the committee, as I have reason to know, are much pleased with the warm sympathy and able assistance thus rendered. Philadelphia has done nothing except pass resolutions.

The case was *well and ably* argued on the 18th and 19th of March, *on its merits*, and we have reason to believe that a decision will be rendered in favor of the dentists. New York and Brooklyn having done the work, and so far paid almost entirely the expenses of the suit, feel that if a decision is rendered which shall relieve us all of this yoke of the "Vulcanite Company," then the dentists of the whole country should assist them in making up such a fee for Mr. Foster, as he will be so justly entitled to, and which has been promised.

I have written this because from what I have seen in the dental journals, there seems to be a great lack of correct information in regard to the matter. C. D. Cook.

In our report on the Cummings' patent suit, which we published in the February No. of the JOURNAL, we failed to give our friends of New York and Brooklyn, the credit due them, for their action in the matter. The omission was unintentional. We simply published the report of the action of the convention, held in Philadelphia February 27th, sent to us by the delegate from St. Louis. We publish the above letter from Dr. Cook, that our readers may know what has been done, and to whom honor is due.—[ED.

MEETING OF DENTAL SOCIETIES.

SECOND DISTRICT DENTAL SOCIETY OF NEW YORK.

The annual meeting of this Society was held in Brooklyn, on Tuesday, April 9th, 1872. After some miscellaneous business had been transacted, the election of officers was held with the following result:

President, Dr. O. E. Hill, of Brooklyn; Vice President, Dr. T. C. Royce, of Middletown; Treasurer, Dr. H. G. Mirick, of Brooklyn; Recording Secretary, Dr. M. E. Elmendorf, of Brooklyn; Corresponding Secretary, Dr. F. W. Dolbeare, of Brooklyn; Librarian, Dr George A. Mills, of Brooklyn. Delegates to State Society, Dr. W. B. Hurd and Dr. W. S. Elliott.

In the course of the proceedings, a call was made upon the committee appointed by the convention of dentists in December, 1871, for information in regard to the rubber suits. This call or request being approved by the Society, Dr. Hill and Dr. Northrup, who were present, gave a detailed statement of the entire proceedings of the committee since their appointment, of the difficulties they had encountered, of the presentation and argument of the case in the Supreme Court, and the hopes of success which the committee entertained.

The annual dinner was given in the evening, at which many distinguished visitors were present, and among them Rev. Dr. Moore, of Cincinnati, Ohio.

Upon reconvening the President elect was formally inducted into the Chair, and the remaining business of the meeting transacted.

The following resolution was then offered by Dr. Marvin, and unanimously adopted, with the direction that it be offered to the several dental journals for publication.

Resolved, That the thanks of the Society are hereby tendered to the committee appointed by the convention of dentists, held in New York City in December last, to prosecute the interests of the profession in the matter of the rubber patents; and also, to the counsel employed by said committee, for the very thorough and able manner, in which those interests were vindicated before the Supreme Court of the United States, and let the result be what it may, we hereby record our approval of their action, our thanks for their unwearied efforts, and our sympathy with them in all their difficulties, and under all adverse circumstances which they have met in the execution of their trust.

The meeting then adjourned.

M. E. ELMENDORF, Secretary.

At a meeting of the Brooklyn Dental Society, Monday evening April 15th, the following action was had:

Resolved, That this Society offer and endorse the resolution of thanks and approbation, passed at the annual metting of the Second District Dental Society, April 7th, as to the action of the committee on rubber suits, and their counsel.

JNO. C. WYMAN, Sec.

ILLINOIS STATE DENTAL SOCIETY.

The eighth annual meeting of the Illinois State Dental Society will be held at Chicago, commencing on Tuesday, May the 14th, at 10 A. M..

The annual address will be given by O. Wilson, of Aurora.

A cordial invitation is extended to every progressive dentist in the State of Illinois and adjoining States, to be present.

O. WILSON, Pres. C. STODDARD SMITH, Sec.

KANSAS STATE DENTAL SOCIETY.

The next annual meeting of the Kansas State Dental Society will be held at Atchison, commencing on the second day of May, 1872.

J. B. WHEELER. Pres. J. D. PATTERSON, Rec. Sec.

LAKE ERIE DENTAL ASSOCIATION.

The Lake Erie Dental Association will hold its next annual meeting at Conneautville, commencing May 7th, at 10 A. M. *Session to continue three days.*

Trains from the north arrive at Conneautville at 12, noon, and 6 P. M.; trains from the south arrive at Conneautville at 1 and 10 P. M.

J. G. TEMPLETON, Pres. C. B. ANSART, Sec.

MISSOURI STATE DENTAL SOCIETY.

The Missouri State Dental Society will hold its annual session at Kansas City, on the fourth day of June, 1872.

Members of the profession in this, and adjoining States, are cordially invited to be present and participate in the discussions. Short papers on any subject pertaining to dentistry are solicited.

This promises to be one of the most interesting and *wide awake* meetings of the Society.

The past year has not passed away without leaving its impress upon the history of dental science.

The following subjects are recommended for discussion and papers:

1. Use of the Rubber Dam, including demonstrations.
2. Smooth and Serrated Pluggers.
3. Burring Engines in Operative Dentistry.
4. Alveolar Abcess and Treatment of Exposed Pulps.

The following named gentlemen have been appointed to read essays:

H. Fisher, C. W. Rivers, G. V. Black, R. J. Porre, E. Park, I. Forbes, J. C. Goodrich, S. W. Reed, H. S. Chase and F. Brewer.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] MAY, 1872. [No. 5.

THE CLAIMS OF DENTISTRY.

[*An Address delivered at the Commencement Exercises of the Dental Department in Harvard University, February 14, 1872, by Oliver Wendell Holmes, M. D., Parkman Professor of Anatomy.*]

We have met, under the auspices of Harvard University, to recognize by formal ceremonies the entrance of a class of students in dentistry upon the exercise of their profession. We give to this occasion the time-honored name of Commencement. Here ends the period of pupilage; here begins the life of applied knowledge and skill.

"Commencement" is not a word to conjure with, as it was a century ago, when it paralyzed for the day the commerce of the neighboring town, and emptied all the villages in a circle of fifty miles of their black-coated and white-wigged clergymen. It is not the grand pageant as I remember it, when the Governor made his entrance to the academic precincts with a troop of horse and a cavalcade of white-frocked truckmen; when the Common was covered with tents, as if an army had encamped upon it, and the trafficking and the revelries of Bartholomew Fair were enacted on the provincial scale upon the green consecrated to the quiet pursuits of learning.

But this Commencement of the Dental School has a real significance, though it makes little show, and does not appeal to any vulgar interest. It publishes the fact that a new pursuit has been assigned its place among those chosen professions which a fully organized educational institution may fitly take in hand, and provide for teaching. And you may be assured, that, before our old university would take such a step, its governing boards had satisfied themselves that the time was fully ripe for

it. The dental profession had achieved its success, and won its place in the estimate of the intelligent public, before its teachers were asked to share the labors and the dignities which belong to the faculties of this great institution.

The occasion must naturally bring together many who have no other special knowledge of dentistry than such as they have gained while sitting in one of those magic chairs which fit alike the giant and the dwarf, which would accommodate the visitors of Procrustes, and suit itself to all the transformations of Proteus. Were this an assemblage of dentists and dental students only, who would dare to open his mouth for speech before the members of a profession in whose presence kings are silent, at whose command eloquence is struck dumb, and even the irresistible and irrepressible voice of woman is hushed into a brief interval of repose? Even if this first fear were overcome, a speaker might well hesitate to address an audience of experts, who know all that he is like to tell them, and a great deal more. But this hour does not belong only to our friends of the dental profession; and they can bear to listen to much that is familiar to them for the sake of their visitors, whose knowledge is limited to what they have acquired after the manner of poets, of whom Shelley says:

"They learn in suffering what they teach in song."

A few generalities are all that can be attempted in a discourse like this; enough to give some little idea of what the dental profession has grown out of, and what it has grown to; a few hints to make us feel more keenly its importance; a picture or two of old superstitions and fancies and barbarisms to contrast with the enlightened knowledge of our own time; a brief mention of some of the leading modern improvements in the scientific and practical departments relating to the teeth; an explanation of the causes which have kept the dental profession from receiving the recognition it has a right to claim; and a vindication of its title to the regard of the community, and to a fair representation of its teachings at the great seats of learning. I mention some of the points I shall touch upon rather than discuss, not under formal headings, and with strict adhesion to the order in which I have mentioned them, but as they appear to present themselves most naturally.

The greatest difficulty in handling the subject is the extent of its literature, and the infinite detail of ingenuity which has gone to the bringing about of the perfection of its mechanical processes. The value of the teeth to human beings is so prodigious, that, as soon as attention was fairly turned to their proper management and the methods of repairing their losses, inventive talent precipitated itself, so to speak, upon the new department of human industry. There is no pearl in any royal crown for which a young queen would give one of her front incisors. And those who know what a perfect organ each one of the teeth is, as shown by the more recent revelations of minute anatomy, what pains Nature has taken with its complex organization, will not wonder at the estimate set upon it.

The teeth, in their relation to the beauty of the human countenance, have figured in poetry from the earliest times. "Thy teeth are like a flock of sheep that are even shorn, which came up from the washing; whereof every one bears twins, and none is barren among them," says the imaginative author of the "Song of Songs." Their whiteness has been compared to that of snow, of Parian marble, and of pearls, until verse is tired of images. The ancient poets and satirists are full of allusions to the beauty and deformity depending on the conditions of the teeth. The ladies who made it their business to please, on Bentham's principle of procuring the greatest happiness of the greatest number, had recourse to every kind of artifice to disguise their defects, and commend their charms. Here is one of these tricks as given by Athenæus, in a passage not cited by Duval in his large collection of classical quotations relating to this subject. I give a part of it in English:—

"They whose teeth are elegant force themselves to smile even against their inclination, so that the beauty of their mouths may be seen by their visitors; but, if their smile is not so pleasant a sight, they hold a sprig of myrtle in the mouth, so that it will cover the teeth when they open their lips, on purpose or otherwise."

As for the unfortunates whose teeth were discolored, or had suffered some of the common changes that age brings about, the satirists scoffed at them in such coarse language, that their

phrases are quite unbearable to modern ears. Even such a personal remark as that of the graceful Catullus would be considered inadmissable in our time: "Your mouth is full of teeth half a yard long, and your gums are like an old wagon-box." The first circumstance—the seeming inordinate length of the teeth—is a well known effect of age, which produces a shrinking of the gums. The Frenchmen talk of *dents dechaussees*, unshod teeth; and I remember that Thackeray, in one of his stories, speaks of certain ladies, not very young ones, as "long in the tooth," among other by no means flattering peculiarities.

We have grown more civil than the Romans: but we know the beauty of a fine set of teeth, and the deformity of the opposite, as well as they did. It is true that men can often conceal the imperfection of their dental arrangements by letting the eaves of a heavy mustache overshadow their mouths. But to women, to hide whose smile would be to take away half the sunshine of life, and to whom Nature has kindly refused the growth that would deprive us of it, there is no element of her wondrous beauty which can take the place of white, even, well-shaped teeth. And as beauty is not a mere plaything, but a great force, like gravity or electricity, the art which keeps it, mends it, and, to some extent, makes it, is of corresponding importance.

But we must add to this the consideration, that speech is so largely dependent on the perfection of the teeth, that our language, we might almost say, loses a letter with every tooth that falls. What can be more painful to witness than the efforts of a hapless friend to bite his consonants out of the alphabet when he is reduced to the condition of the infant, whose boneless gums are unfit for any task but the caressing pressure of the maternal mouthful!

And then the humbler, but still necessary function of mastication—how much depends on the ease and perfection with which it is performed! You can tell the state of a village by going to the mill. If it has enough to grind, and grinds it well and cheaply, you will find good farms and well-fed people; so, if you see a good square jaw, filled with good sound teeth, and moved by a set of muscles that mean business, and do it, you

will find, in all probability, that they nourish a sound frame in man or woman. I have never forgotten the complaint of poor Walter Savage Landor—a sadder one than any of the Preacher's, it seems to me. I quote it from memory. "I have lost my mind," he said; "that I do not care so much about; but I have lost my teeth, and I cannot eat." It has been my custom for many years, when lecturing upon this part of anatomy, to bring forward the skull of a large turtle, in order that its jaws might be compared with those of the human being in very advanced years. The sharpened edges of the alveolar border in the old man show the retrograde process by which he returns to the quasi-embryonic condition, reminding us of that earlier period when he passed through the scale of being, upward, to reach the supremacy of which age is constantly trying to deprive him.

It is no wonder, then, that the teeth have been particular objects of attention from the earliest period. The Egyptians, who made specialties of everything, had professional dentists; and it is asserted that artificial teeth of ivory or wood, some of them on gold plates, have been found in the jaws of mummies. The teeth of mummies are said also to have been found filled with gold. I do not find any distinct notice of a dental profession from the time of the Egyptians to that of Galen. You will permit me to quote, in the original, a passage which I have unearthed in one of his treatises, because it makes use of an adjective which will be found in our catalogues and diplomas, where it was admitted after some discussion:—

"Omnes tamen istos communi nomine medicos appellant, perinde ut eos, puto, qui a quibusdam membris, quorum præcipue curam gerunt, vocitantur: hos namque ocularios, auricularios, DENTARIOS (ita dicere liceat) medicos nominant."

It is a long interval from Galen to the middle of the seventeenth century; but I have not found any other traces of a special dental profession until I came upon the following, which looks very much as if it referred to such specialists. In the Diary of the Rev. John Ward, vicar of Stratford on Avon from 1648 to 1679—the book rendered famous by a reminiscence of Shakspeare, for which the poet would not have thanked him—is the following:—

"Uppon a signe about Fleet Bridg this is written,

'Here lives Peter de la Roch and George Goslin, both which, and no other, are sworn operators to the King's teeth.'"

Whether these operators had any other calling than this august office does not appear. Early in the next century, the practice of dentistry seems to have been in the hands of silversmiths and jewelers. I think many of us can recall the name of a fellow-citizen—originally, I think, a watchmaker—who branched off, without any special training, into the business of a dentist, and who acquired a considerable name for filling teeth with skill and success, taking time enough about it, and receiving very handsome pay for his services.

Dentistry as a profession may be safely said to have come into existence during the present century. In this country, its growth has been of wonderful rapidity. One would have thought that Cadmus had sown a new furrow full of teeth, and that they had sprung up dentists. In 1820 it has been computed that there were not more than a hundred dentists in the United States; in 1858 there were four thousand. I presume they have increased in as rapid a ratio since that time; and, in the meanwhile, works on dentistry, journals devoted to it, institutions for teaching it, have become so numerous, that it is recognized as one of the great callings of life.

If we would know what we have gained by the elevation of dentistry into an honorable special branch of medical practice, we must go back to the time when ignorance, superstition, and bungling awkwarkness, reigned over the whole province of art, now so fully illuminated by science, and in which such admirable mechanical skill has developed itself in every form to relieve suffering, to supply deficiencies, to add in all possible ways to comfort and comeliness.

It is simply amusing to look back two or three centuries, and see what men were capable of believing. You will find in Ambroise Pare various forms of words in use in his time to cure the toothache. The notion that this pain was caused by a worm, which Shakspeare refers to, is at least as old as Avicenna. Strange significance was attached to an anomaly which an old friend of mine told me happened in his own person; I mean the same fact that Richard the Third boasts of, namely, that he was

born with teeth. "A girl was born at Picenum with six teeth," says Polydore Virgil; "and at that time the Turks began to capture our towns far and wide." But nothing quite equals the story of the miller's little son, whose second molar on the left-hand side of the lower jaw was a golden one—as good, they said, as if a goldsmith had made it. Some pretended having seen the letters C. S. C. legibly inscribed upon it. I have before me a most exact statement of the facts of the case, authenticated by a number of eminently respectable personages; and I find in Haller's "Bibliotheca Anatomica" various notices of the storm of controversy excited by the story of this Silesian boy with the golden tooth. "What it portends," says Lawrence Scholtzius, "I do not hesitate to declare is known to God alone." It is to this most famous case that Sir Thomas Browne refers, when he says, speaking of the pretended difference of posture in which drowned men and women float, "But hereof we cease to discourse. lest we undertake to afford a reason of the golden tooth; that is, to invent or assign a cause when we remain unsatisfied or unassured of the event." And in the margin, "Of the cause whereof much dispute was made, and at last proved an imposture." All this was a good while ago; but I am myself old enough to remember several curious notions about the teeth, which had a considerable currency, and came near enough to being believed to be told pretty seriously. If one had a tooth extracted, it must be burned, because, if a dog got it and swallowed it, one would have a dog's tooth come in its place. I recollect a story told me of a somewhat noted character, whose smile, or other attractions, had made him dangerous to the sex formerly called the weaker one—a personage too well known to the scandal of his time—who was said to have his teeth, or some of them, extracted, and replaced by those of a living animal—a calf or a sheep. This story was told seriously; and the hero of it I have seen with my own eyes, when age had disarmed him of the fatal fascinations of his earlier days. There is a common notion enough, still prevalent, that some persons have a complete set of double teeth, as they are called—a jaw full of molars. I never saw one, and I doubt if anybody ever did; but the teeth of Indians and sailors, ground down by the attrition of hard grains or sea-biscuit, might be mistaken for such a malformation.

It is only since the year 1835 that the anatomy of the teeth, out of which necessarily arose new views of their physiology and pathology, can be said to have been fairly understood. It is true that old Leeuwenhoeck had described the "pipes," as he called them, of the dentine so long ago as the year 1678; but his discoveries were so much ahead of his time, that they had to wait some generations, like the seven sleepers, before they woke up, to find themselves confirmed. An article in "*The British and Foreign Medical Review*," for the year 1839, brought before the profession in England and America, in a connected way, and with illustrative figures, a series of discoveries which had changed the whole aspect of dental anatomy. We owe all these discoveries, or rediscoveries, to the invention of the achromatic microscope, which enables any of us to show the student the beautiful intricate structure of the teeth as plainly as he can see the anatomy of the skeleton with the naked eye. You have all studied the exquisite tubular arrangement of the dentine, have speculated on the nature of the contents of the tubes, first demonstrated by Owen in the elephant; have examined the prisms of enamel, and the stellate cells of the cementum; you have seen the vascular systems of the pulp, and around the fang, and how they run into each other; the tooth is for you a delicately organized living structure, carrying on nutritive functions through the greater portion of its substance, and capable, to a certain extent, of repairing its injuries. To those who studied Bell's or Meckel's Anatomy, who reads the works of Hunter or Fox on the teeth, all this is a revelation which only those can fully appreciate who were born in the benighted days of dental heathenism.

While the scientific basis of dental art has made these great advances in modern days, the practice of the art itself has undergone the most wonderful transformation. The work of filling teeth has been carried to such perfection, that not only is decay arrested, and a tooth which seemed destined to rapid destruction so repaired that it will last a lifetime, but, where the greater portion of a tooth was gone, it has been built up, so that the miracle of the boy of Silesia is wrought every day by mortal hands; and we see a golden tooth in a living mouth without fearing an invasion of the Turks, or a war with England. I

suppose that the improvements in this particular department of dentistry, the invention and perfecting of mineral teeth, their insertion on plates retained by atmospheric pressure, the substitution of the improved forceps for the clavis, and the application of anæsthesia to extraction, would be considered the greatest achievements of modern dentistry.

What a change since the time when teeth were allowed to decay as if they were not worth the gold it took to fill them! What a change from the time of those ghastly *rateliers*, as the French call them, carved in ivory, and supported by springs that creaked with every motion of the jaws, like the thoroughbraces of an old-fashioned stage-coach! Could any thing be less inviting to social intercourse? Could anything be more appalling to tender infancy than the sight of one of those dancing-sets of artificial teeth, looking as if they were ready to jump from their owners' mouths, and fasten upon one, as they used to say a turtle's head would do after it was cut off? Mr. Greenwood, of New York, you may remember, carved a set for the Father of his Country; and one can hardly fail to see how the flattened and compressed lips were in a perpetual struggle with those loose-fitting arches and rebellious spirals. Yet this was considered a masterpiece of dental workmanship; and I have no doubt that pilgrimages have been made to Mount Vernon by artificers in that line of business, who left with a tear in one eye at the sight of Washington's majestic countenance, and a twinkle of satisfaction in the other at the triumph achieved by Mr. Greenwood.

Contrast this state of things with the manufacture of artificial mineral teeth as carried on in this country, where it has been brought to its greatest perfection. More than ten years ago, there were nine factories engaged in their fabrication, and more than two million teeth were made in a year. To-day, I suppose they must be made and sold by the bushel, like the cereal grains; and, if the great factories required elevators to handle their products, it would hardly surprise us. Compare the delicately-tinted, exquisitely-shaped porcelain incisors with those frightful ivory palisades that used to play up and down like a portcullis in a manner to terrify all beholders. In fact, the perfection of artificial teeth is carried almost too far. They have come to be

for the inside of the head what the wig was for its outside in the days of our ancestors. It was so much more convenient to have a head of hair that one could whisk on and off in a moment; one that never grew gray; one that was just the shade the owner fancied, that was always in curl, that could be laid aside in hot weather to let the cool breeze play over the naked scalp (a luxury which Adam never knew in Paradise, and coming about as near to "sitting in one's bones" as is practicable while we are in the flesh),—all this was so much more convenient and comfortable than the arrangement provided by Nature, that the wig reigned undisputed for generations, and will, not very improbably, return to bless mankind before our children's children are bald and gray. So with the artificial teeth of this dental millennium in which it is our good fortune to live. They are comely; they never ache; they are contented with their situation, and keep their place, which is more than we can say of most of our living servants; they undergo no changes in the mouth; they admit of the nicest personal proprieties; they serve perfectly for articulation; and though one can hardly crack a peach-stone with them, as some can with their native molars, or use them for biting off the heads of iron nails, as used to be told of Ethan Allen, they can do good service in the respectable and responsible duties of mastication. The consequence of all this is, that people are only too ready to have their natural teeth shelled from their gums like so many grains of Indian-corn from the cob, and a complete mouthful of artificial make inserted in their place. You miss your friend for a little time—he is in his chamber, with his jaws tied up, perusing "Zimmermann on Solitude" for a few days: suffering from toothache is the figurative language in which his condition is announced. When he returns to society, he has recovered his youth-like Æson in the hands of Medea; and his smile is a glittering welcome, a mineral benediction, which is a joy forever to have been blest with. Think, again, what that preliminary process of edentation would have been in the days when the rustic patient complained that he had to pay as much as his neighbor, who had been dragged three times round the room before the tooth came out. There never was a claw on bird or beast that was the cause of such anguish of apprehension, such howls of agony, as that

diabolical instrument, looking like a vulture's talon, but known by the name of *the key*. It was a key indeed; it may have opened the door of heaven to the sufferer in due time; but, while the bolt was turning, the victim thought he was in that other place, where the man must be who invented the instrument of torture. *Now* a patient comes in; takes a few whiffs of an anæsthetic; has a dozen or more teeth submitted to the embrace of the gentlemanly forceps, which lifts them from their sockets as one takes out the pegs of a solitaire-board—say, rather, as a father lifts his first-born infant—comes to; stares about him; asks when they are going to begin; is told that it is all over; bursts into tears of hysteric gratitude; kisses the smiling dentist; wants to hug all mankind, and make the human race happy at once; sobers down presently, ties up his face, and takes to retirement and Zimmermann for a season, as before mentioned.

I have seen something, as, probably, most of us have, of the practical skill of dentists; but, in alluding to some of the more important recent advances of the dental profession, I was unwilling to trust my own fortunately limited experience, and have counselled my friends, Dr. Moffatt, of this city, and Dr. McQuillen, of Philadelphia, the late editor of the journal known as *The Dental Cosmos*, both of whom have kindly favored me with their own independent opinions as to late improvements.

The use of the mallet in filling teeth, every blow of which instrument is a fractional knock on the head to the patient equal to about one hundredth of that which a slayer of cattle gives to a full-grown ox to finish him, but which, being taken in divided doses, allows the sufferer to escape with life—the use of the mallet, automatic or other, far from agreeable as it is, is considered a vast accession to the art of dentistry. Every man must be anvil or sledge, says Goethe; and it is quite plain that our friends the dentists have settled it so far as they and we are concerned.

Nothing has excited my admiration more than the wonderful drills, moved by the foot, or any other power which may be preferred, finding their way into every corner of the mouth with a sinuous grace of movement such as the serpent displayed for the fascination of our unfortunate first parent, and making their

way into the solid dental substance with a rapidity from which the engineers of the Hoosac Tunnel might borrow a most significant lesson.

The employment of sponge gold for certain purposes, and the use of heat to develop the cohesive properties of the metal, have enabled the dentist to perform those remarkable feats of building up a tooth from its ruins, to which I have before referred.

The public seems hardly to appreciate the very great value of the cement fillings—both the oxide of zinc and the gutta-percha—either of which is capable of preserving for long use a tooth too infirm to bear filling with gold.

The use of sheet India-rubber to protect a tooth from moisture while being filled is another most valuable innovation.

I learn that even exposed pulps may be protected by artificial means, and thus a tooth saved as a living organ from an almost helpless condition.

Important as are these mechanical inventions, the growth of dental associations, educational institutions and journals, mark a still more general advance of the profession. I have known something of the teachers of the art, of their zeal, their capacity, their disinterested desire for the elevation of their calling. I have for years been a frequent reader of *The Dental Cosmos*, and I can bear testimony to the great intelligence with which it has been edited. I have found in its pages much information, of interest and value, that I have never met with elsewhere; and I have seen a great many medical journals with a broader title page and a vastly narrower table of contents. Yet this is but one of five dental journals published in the United States; and at least as many are published in other countries. It is from a living and wide-awake profession, then, that the new faculty is invited to share with us the honorable task of teaching; and we cannot doubt that the community will encourage, and it may be hoped in due time liberally endow, the infant offspring of Harvard University, now cutting its first teeth with every promise of health and vigor.

The picture of old age drawn in Ecclesiastes is wonderfully impressive—all the more so in consequence of the obscurity of some of its images. But we all know what the Preacher means

when he speaks of the drawing-nigh of the years when we shall say there is no pleasure in them, and of the day when the grinders shall cease because they are few, and those that look out of the window shall be darkened. There were no dentists in those days to rejuvenate the old man with a third dentition. There were no opticians to supply his failing vision with the second eyes of old age. The aged people seem to have been in a most forlorn condition at a time when the men of to-day not rarely have a good deal of vitality left, and enjoy life, and help to make others enjoy it. To us who remember the late Josiah Quincy and Dr. James Jackson, long after they were eighty years old, who knew something, by report, of Lord Lyndhurst and Lord Brougham in their later years, it seems strange to hear Barzillai say to King David, "I am this day fourscore years old; and can I discern between good and evil? Can thy servant taste what I eat or what I drink? Can I hear the voice of singing men and singing women?"

But what would old age be to a great number of persons without the aid of the dentist and the optician? The worn-out laboring man, unused to books, and with limited capacity for social intercourse, may get along well enough, perhaps, with his pipe, and his seat in the sunshine or by the fireside. Father Abraham may not have felt the need of spectacles; he went to bed early, no doubt; there was no daily newspaper to read; and he did not shave. But what would become of the scholar, or of persons of any cultivation in our days, who at fifty or sixty should find themselves cut off from reading, and, not improbably, rendered unpresentable, or at least miserably uncomfortable, in society, in consequence of imperfect articulation? The care of the eyes is therefore recognized as one of the most important specialties in medicine, and the study of ophthalmology has engaged some of the most distinguished professional talent in this country as well as in Europe. The province of dentistry is only second in importance to the other domain of medical science and art, and rivals it in the intelligence and activity of those who teach and practice it. In one respect, it is of greater public interest than the other branch; most children's and young persons' teeth require positive attention; whereas their eyes, in the great majority of cases, take tolerable care of themselves. I

think there are twelve times as many dentists in this city as there are oculists. If every one had twenty eyes in the early part of his life, and thirty-two when full grown, the number of oculists and dentists might be more nearly equal.

The branch of the medical profession to which this graduating class has devoted itself has not taken its proper position until within a comparatively recent period; but, in this respect, it has been no worse off than other branches in former times, or than the entire profession at some periods of its history. The Romans contrived to live without doctors for some five hundred years: when they got them at last, they were slaves—Greeks, for the most part—and kept as appendages of a great man's establishment, as he kept a cook or other servant.

The worthy vicar of Stratford on Avon, to whom I have before referred, gives us some very curious information as to the state of the medical profession in England in his own time and before it. A few paragraphs are worth quoting:—

"The Saxons had their blood-letters, but under the Normans physick begunne in England; 300 years agoe it was not a distinct profession by itself, but practised by men in orders, witness Nicholas de Ternham, the chief English physitian and Bishop of Durham; Hugh of Evesham, a physician and cardinal; Grysant physician and pope; John Chambers Doctor of Physick, was the first Bishop of Peterborough; Paul Bush, a bachelor of divinitie, hee was the first Bishop of Bristol." "In King Richard the Second's time physitians and divines were not distinct professions; for one Tydeman, Bishop of the Landaph and Worcester, was physician to King Richard the Second." And again: "Ddmund, Earl of Derby, who dyed in Queen Elizabeth's days, was famous for chirurgerie, bonesetting and hospitalitie."

We may be sure that all this meant a very low condition of medical knowledge. And this opinion is confirmed by what is found in the same Diary a few pages farther on.

"Dr. Sydenham is writing a book which will bring physicians about his ears, to decrie the usefulness of natual philosophie, and to maintaine the necessitie of knowledg in anatomie in subordination to physick.

"Physick, says Sydenham, is not to be learned by going to Universities, but he is for taking apprentices; and says one had

as good send a man to Oxford to learn shoemaking as practising physick."

There were other heretics besides Sydenham; for as Mr. Ward tells us, "Some have said that physick is no art at all, nor worthy of the name of a liberall science, as Peter And. Canonherius, a practitioner at Rome, endeavored to prove by sixteen arguments."

The vicar himself practised physic, as well as preached, like others of his clerical brethren. We find from him that quarrelling and quackery were quite as common then as now. The university-teaching which Sydenham spoke of with such contempt was, of course, the book-learning of the time, and not the practical instruction of later days. Much as we have gained, the following words from the Diary are not so far from truth to-day as they might be:—

"There are several sorts of physitians, said one; first, those that canne talk but doe nothing; secondly, some that can doe but not talk; third, some that can both doe and talk; fourthly, some that can neither doe nor talk, and these most monie.

"Some doctors have a noble out of a pound of their apothecaries; as Dr. Wright; many (have) a crowne, as an apothecarie in London told me."

In this last sentence, and in the fact that the English "general practitioner," so-called, has charged, not for his advice, but for his pills and potions, lies the secret of that disgraceful drugging system which has racked the entrails of Englishmen from generation to generation; which we inherited from the mother-country; and which is fast giving way to those more rational views, in which healthy nutrition, and the skillful alleviation of symptoms, are taking the place of the exhaustless depletions and specific poisons supposed necessary to the cure of disease. In spite of this corrupting influence, Enlish medical science and art asserted themselves successively in men like Linacre, Harvey, Sydenham, and Mead, and the practitioners who confined themselves to medical, in distinction from surgical, practice, so as to deserve the eulogies of such personages as Dryden and Pope, of Johnson, and Parr, and Blackstone.

But chirurgery—medical hand-work—fared very differently. No longer ago than when President Holyoke, whose son, the

venerable physician, some of us well remember, entered upon the duties of his office, and for years after that time, the London Company of Barber-Surgeons were holding their meetings at their hall in Monkwell Street; and it was not till very near the middle of the last century, that the surgeons were incorporated as a separate body. It was about the same time, that is, during the reign of George the Second, that the question was discussed in open court, before the chief justice of England, whether a surgeon was "inferior tradesman," within the meaning of a certain statute of William and Mary. But we must remember in what contempt other of the most useful occupations were held so long as society was enslaved by its feudal traditions. Traffic and agriculture were scorned by the descendants of the Norman robbers, until they were starved into better views and more civil language than they had inherited.

> "The toiling tradesman and the sweating clown
> Would have his wench fair, though his beard be brown,"

says Michael Drayton in the poetical epistle of Edward Fourth to Mistress Jane Shore. And new the great nobles of Britain are very glad to turn an honest penny by traffic, instead of taking it by force from their neighbors.

> "Lord Stafford mines for coal and salt;
> The Duke of Norfolk deals in malt;
> The Douglas, in red herrings."

One son of the Duke of Argyle marries the queen's daughter; and the other comes to New York, and goes into a trading-establishment. In this country, more especially, the useful arts have no right to complain of their want of fair recognition. If we do not absolutely forbid idleness, our rich men and women who live for amusement only are very apt to find themselves uncomfortable until they can get out of a country where there are bounties granted to fisherman, and nothing but taxes for gentlemen of leisure.

The movement of civilization is a perpetual struggle between the arts of destruction on the one hand, and those of construction and conservation on the other. All that the earth teaches us of man in the earlier periods of his ascertained existence shows him to have been a fighting cannibal, who cracked the bones of his deceased relatives, to get their marrow, with the

same pious satisfaction his descendant shows in breaking the seal of a last will and testament. The best man among savages is the one who swings the heaviest club, and has eaten the largest number of his enemies, or who carries most scalps at his girdle. It is somewhat better in our day; but the ideal state of society is not yet made quite real. The fighting man is still the one most honored by the world. Even the phraseology of our religion, which points to the Lord of hosts and the Captain of our salvation, shows us how deeply-rooted is that feeling of the supreme excellence of a military title, which we inherit from the man-eating troglodytes.

But the modern movement, in its truest form, insists that mutual destruction is not the chief end of man. Even the fighting Romans had got so far as to decree that the oak-leaf garland, *ob cives servatos*, should take precedence of the conqueror's laurel. And Christian civilization is ready to acknowledge, to-day, that the only really noble warfare is that against the evils which beset the race. Men must be slain for a long time, always perhaps, in the greater conflicts of right and wrong, but humanity confesses, that, apart from the righteous end to be attained, a bloody victory is only a less calamity than a bloody defeat.

The arts of peace are gaining in consideration over the arts of war, slowly, we must own, but steadily. And, if any one of these arts of peace should have appeared entitled to the highest consideration of a civilized people, it would seem to be that which professes to relieve suffering, and prolong life. So it would have been if medicine could have done all that was asked of it. The physician would have been held only second to the Deity, had he not too frequently disappointed the expectations of those who were ready to worship him. This always was and always will be. The children of Israel complained that they had to make bricks without straw; the physician has to make bricks without clay. Many of the patients that come to him had never any physiological right to live at all. They are not much nearer to the true human pattern than that same starved Justice Shallow, who was like a man made after supper of a cheese-paring; when he was naked, for all the world like a forked radish. And they come complaining that they are not in condition to run ten miles within the hour, or fight the champion

of the heavy weights for the prize belt. It has taken a dozen sickly generations to breed them down to constitutional invalidism, and they want a pill or a powder to set them all right again. Or they come to the physician at fifty or sixty, wrecks of fine constitutions, got up originally without regard to expense, but burned out with strong drink, and browned to the marrow with narcotics and nicotics, and want back the virginity of their sodden and corrugated tissues. Or, it may be, some desperate and violent malady has stabbed them to the death, and, because no one has seen a hand with a poniard in it, the patients or their friends think that some drop or potion will undo the mortal effect of the invisible dagger-stroke.

These inevitable disappointments have kept the medical profession from receiving that degree of confidence and of honor to which its noble function seemed to entitle it. It does its best; but that is not enough for the eager demand of men for health, and length of days. Hence the great number of pretenders and pretentious systems which profess to be able to meet this want. Men, and, still more, women, wish to be deceived; and it becomes a lucrative trade to promise cures, as it was to promise gold in the days of alchemists.

"Spondent quas non exhibent divitias, pauperes alchimistæ.',

In spite of all the obstacles which meet those who give their lives to the pursuit of knowledge, without regard to the prejudices it disturbs, science was never honored as it is in our time; and the science of life was never studied as at the present day—never with such an apparatus of research, never with such concentration of talent on special investigations, never with such hope of resolving the most difficult problems within the reach of human faculties. Considered merely as a study, medicine is a great and profoundly interesting branch of science; but having regard to the interests it deals with—life and death, well-being and misery, the conditions of mind and body, the happiness or wretchedness of whole communities—we can hardly wonder, that, in early ages, a divine origin was assigned to it, and that he who is called the Lord of hosts is also spoken of by the nobler title of the Healer of the land and of the people.

Your profession, young gentlemen, is now an accepted province of this great and beneficent calling. It has shared the

effects of that onward movement which has asserted for the arts of peace the dignified position to which they are entitled. You are bound, in your turn, to reflect honor on the institution which has invested you with authority to go forth as its representatives in the domain of your special duties. The diploma you have received is a certificate of your fitness for these duties; but it implies a promise that you will try to do credit to those who stand sponsors for you as you are christened with your new title. Harvard University is doing all it can do to recognize the value of your profession to the community; and it does this at the time when it is making the most strenuous efforts to place medical education on a basis worthy of a branch of knowledge so complex, so vast, so all important to mankind. That open volume with *Veritas* inscribed upon it should be, and it is, carried at the figure-head of the argosy of our American intellectual progress. Our university always was, and must be, a leader in educational movements. She is waiting for those to follow that dare, to pass her that can; and, if any drop astern, she must wave them a courteous salute, and leave them.

And now, gentlemen, we bid you God-speed as you go from these halls to exercise the talents which have been here trained, and apply the knowledge which has been here imparted to you. May you find the public ready to appreciate and reward your skill; and so acquit yourselves that the ear which hears you shall bless you; and the eye that sees you bear witness to you; that the smiles of innumerable friends may reveal to you the perfection of your own handiwork; and your praise be in all the mouths of a grateful community!

Operative and Surgical Department.

DR. ARTHUR'S SYSTEM OF TREATMENT FOR THE PREVENTION OF DECAY OF THE TEETH.

By O. A. Jarvis, D. D. S., New York.

It must be a real pleasure to every right-minded dentist to receive any creditable addition to dental literature. Its paucity is felt and deplored. Yet it is well not to be in haste to add text, standard, or popular works on dentistry until principles are better understood and practice better defined.

We question the wisdom of advocating with so much boldness a practice so at variance with nature, and receiving such doubtful support from results in practice.

Whatever may be the influence of this little book upon the practice of the profession, it is certainly calculated to weaken the confinence of people in dentists and dental operations.

Let us examine the main idea of this book,*—viz., artificial separation for the prevention of decay. This idea has been forced upon the consideration of every man who has ever filled teeth, or tried to save them by any means; and it has been resorted to in every man's practice to the fullest extent allowed by judgment and experience. We will study this book with all diligence to learn how to do it better. We are thankful for the book, for what it teaches—especially for what it suggests. Some will find a ready apology for their own shortcomings in the general failure which the author affirms; others will be stirred to deeper thought and more earnest efforts for a fuller measure of success.

The proposed plan is not confined to certain forms or classes of teeth, but is put forward as "a new method,"—a substitute for filling.

*Treatment and Prevention of Decay of the Teeth. By Robert Arthur, M. D., D. D. S.

The first point I make is, that the separation answers the desired end only in so far as it renders the surfaces self-cleansing; that is, the food, in the act of mastication, enters the first V, which is naturally formed by the rounded margins of the grinding surfaces (and by Prof. Arthur's plan is artificially enlarged), is forced past the double apex into the second V, at the crevix, where it lays in contact with the gum. If the space will admit sufficient food, of a somewhat solid character, it will cause pain in the gum, thus necessitating *change*, which generally secures *safety*. Then if we add a third V, with its apex pointing to the buccal surface, it would seem impossible to do any chewing on those teeth, or even to take fluid in the mouth, without changing the contents of those spaces. This is a very common type, such as are represented by Fig. 1. But Prof. Arthur does not leave them even here, with the point of bearing unchanged, but requires that the separation be "thorough, free from the grinding surface to the gum." p. 155.

Let us merely name some of the objections to this treatment.

First. It is unnatural—it does not harmonize with the plan of the original Artist; and progressive dentists are inclined to follow the teachings and preserve the types Nature gives.

The first or outer V, in its normal condition, is small or restricted, apparently for the purpose of *preventing* the passage of food between the teeth, as well as to furnish the greater extent of grinding surface. Prof. Arthur's proposition is to enlarge that V so that the food, pick, tape, etc., *may* pass freely.

Second. The point of contact in the normal condition of the teeth is almost invariably *single*, and generally more limited in extent than can be secured by artificial separation. The point of bearing should never be removed, or, if removed, it should be restored. Go all around it; restrict or lessen it as much as you please; but if removed, it is an irretrievable injury—there can be no possible compensation for it.

Third. The injury to the gums and process by the pressure of food in the act of mastication, and the violent pressing of the tooth in one direction, and the next instant in the opposite direction; the present pain and resulting periodontitis and probable absorption; the annoyance to the tongue by the artificial angles.

There is positively no weight in the testimony of a few patients to the effect that they experience no inconvenience: we have not yet to learn that people will get used to a mouthful of broken and decayed teeth' But if we are going to appeal to the people for their verdict, we have it already in the universal horror and undying dread with which they have regarded the practice for the past thirty years. It is often alluded to in this book as a prejudice. It is *testimony*, as sound as the other.

Fourth. The teeth generally do, and may be expected to, shift their position, unless prevented by antagonists. The movement will be in a direction opposite to the slope upon the grinding surface doing the most work. Sometimes it will be lateral, sometimes rotary; often both. In fact, a tooth will not stand alone, independent of companions or antagonists, when subjected to lateral pressure.

It would not seem necessary to inquire if the separation can be maintained when made at the early age required for the prevention of caries, before the teeth have all taken their position. See Figs. 28 and 33.

When after separation they come together again, as Prof. Arthur says they "not unfrequently do" (p. 98), and "they are liable to" (p. 156), we are almost sure to have a broader surface in contact, perhaps more than one point, and certainly a narrower space at the crevix, the very place where the space is most needed, and where the very act of coming together produces pressure and consequent absorption—the difficulties of inspection being thus immeasurably increased. But our author says "cut again" (pp. 98 and 156). Why not as well say "fill again," or repair? If timely, it would be as easy and as sure.

If there is any complication of difficulties to be dreaded, it is such as arises from separations and shifting.

Fifth. Another but slight objection is the fact that exposed dentine always discolors.

Sixth. It is unnecessary; there are two plans, either of which is better. First, the care on the part of the dentist and the patient which Prof. Arthur requires (p. 159), if timely applied, would probably secure the desired results; second, there is a better plan of separation. Judging from experience in my own

mouth and in practice, if my teeth were to be treated by cutting away anywhere for the prevention or arrest of decay, I would prefer it should be done by enlarging the inner or second V, leaving the grinding surfaces intact. This plan would give space where most needed; would more readily reach the point where decay commences; need not endanger the pulp; the surfaces could be as easily inspected; there would be no change of position; there would be no angles and less cut surface; it can be easier done; there would be no inconvenience in mastication; properly done, the gum would probably not change its relation; and finally, it would be quite improbable that so large a quantity of bread and potatoes would be wasted in the mouth of any patient who had passed under the hands of a faithful dentist. This I propose and practice as a substitute for Prof. Arthur's plan for *prevention* and the removal of incipient proximate decay. But let us try again the filling plan, pronounced by Prof. Arthur a failure, as applied to the proximate surfaces of the bicuspids and molars.

Imperfect operations are a more prolific source of failure than all others combined. This is a fact which can be demonstrated. To enter into the details at present would be too tedious.

Remove one of those fillings in a mass where decay has recurred, and examine it with a glass. In one case it is imperfect preparation; in another, imperfect packing; in another, injury to the walls in packing; in another, it is not properly finished. Now, all these imperfections can be avoided, and should be, rather than resort to the new method.

Another source of failure of fillings in this latitude, still more prolific than "uncleanliness," is a lack of full and complete restoration of the crowns, even in what are called "contour fillings." The space at the cervix is contracted by the teeth coming together, producing soreness, and, by reason of the tenderness of the parts and lessened space, *preventing* cleanliness. In this manner we incur to some extent the evils of the "cut-away" plan. We establish a set of circumstances calculated to result in decay: whereas, if there is full restoration, there is less probability of decay than in the original condition, for the sim-

ple reason that the point where it has occurred, and generally does occur, is now occupied by an undecaying substance. It did not in that particular case originally, and does not generally, commence to decay at any part of the line now occupied by the margin of the filling. The simple fact that decay recurs is sufficient evidence of an imperfect operation, or the result of the cut-away plan and coming together again.

But Prof. Arthur requires even for the success of his plan that the tape must be used "several times every day" (p. 157). Haven't we reason to believe that *with* such treatment decay would never occur, even on the proximate surfaces of bicuspids and molars?

On page 95 we are told that it is not "the slightest disfiguration" to cut away the incisors. A clerical friend, whose eye lit upon the proposition, remarked, "What a pity the Lord did not know about that in the first place."

These teeth are provided by Nature with a thicker, heavier portion of enamel, and especially the linguo-proximate portion often somewhat in the form of a scroll, with more or less of a depression in the center, or between the two enlarged portions of enamel. The distance between these two extreme points is as great or greater than between the two points immediately anterior, often a little depressed, being the exact points where decay is expected to make its attack. Can we claim that there is no deformity when this mass of enamel is removed, which was placed at this particular point to sustain the cutting edges (which are very likely to be already checked, and so often break away), and to furnish a triturating surface in occlusion with the points and anterior surfaces of the inferior incisors, as important as the grinding surfaces of the molars? When the natural relations and conditions are changed it *is* a deformity, and the cutting away of the front teeth at these points is a deformity both seen and felt. The front teeth as well as the bicuspids and molars, are formed to protect the gums. The gums will bear to be wounded, but will not bear an unnatural pressure.

On page 169 the author says, "What I propose is the separation of teeth closely in contact, which are of such frail character, and are exposed to such destructive influences, that their decay

is inevitable, or has already occurred." This proposition may be met in this manner: 1. The care the author *requires in any case*, as a *sine qua non*, will very generally answer the saving purpose without any operation. 2. The teeth are never in actual contact except at a small point—the most projecting part of the crown. 3. It is folly to remove the only points of contact when contact is necessary and inevitable. 4. Lessening the point of contact, while enlarging the space already too small at the cervix (the second V), will give all the advantage which can be *secured* by any means.

But our author speaks of leaving projecting dentine near the gum (p. 158). How are you going to get projecting dentine near the gum, and what will be the shape of your tooth by the time you get it? Where is the gum and the process by the time the dentine of the two teeth come in contact?

Again, how certain are we when we determine "that decay is inevitable!" How often do we see cases where the "destructive influences" have been removed and the "frail character" no longer appears!

I have endeavored to state the reasons of my conviction, based upon theory and practice, that the plan of artificial separation of the teeth as proposed in this book is not necessary; is not the best treatment; and is a failure.

CHICAGO, 1872.

DR. H. S. CHASE, *Dear Sir*:—I was very glad that you opened the pages of the JOURNAL for the younger members of the profession. I find that I am much benefited by studying up any of the numerous subjects belonging to the dental profession. If anything I may say in praise of your labors as a teacher, worker, and writer, in the dental profession *will* encourage you, my heartiest thanks are yours for the instruction I have received in perusing the MISSOURI DENTAL JOURNAL since its first issue. I wish you great success.

Yours truly, ———

ROOT FILLING.

BY A. W. HARLAN, *Chicago, Ill.*

I have nothing new to say on this subject, but will give the benefit of my short experience in the use of *tin* for root filling.

About four years ago I thought that it would do no harm to try this metal for that purpose: then I began to look for patients whose general health was good, who had strong, hardy looking teeth, and kept their mouths in good condition. I found one that answered all my requirements, with a molar tooth and roots to fill, who would not have the tooth filled with gold, or could not, on account of the expense. I filled the roots with tin-foil, and the crown with amalgam. After filling thirty-eight molar teeth and their roots in this way, I stopped for developments; in about six or seven weeks a young lady returned with a lower molar tooth abscessed; but I must state that she was so circumstanced at the time the tooth was filled that it could not be treated properly.

In about nine months a gentleman for whom I had filled four molars with their roots, returned with another abscessed lower molar. This is the sum total of the abscessed teeth where tin was used, at the end of four years. The other teeth are in good condition. I have seen them as often as once in six months since filling them. The roots were treated from a month to six weeks with carbolic acid before filling. The question is, am I justified in filling teeth in this manner where the patient is unable to pay for a gold filling? I think so.

[Remarks by the Editor.]

Tin foil is just as good as gold for filling the roots of teeth. It is entirely innocuous, and sufficiently indestructible, while its softness and pliability recommends it. Where gold is to be used for the crown, it will be better to fill the bulbous portion of the pulp cavity with gold also, so as to weld these portions of gold together.

As to the *success* of Dr. Harlan's treatment, it was about equal to what might be expected from the same number and character of teeth whose roots should be filled with gold.

THE CAUSES OF THE DEPOSITION OF SALIVARY CALCULUS.

By E. C. Chase, D. D. S., *Iowa City, Iowa.*

With the exception of a few French authors, all the writers of dental literature agree in the well-established fact that the source or origin of salivary calculi is in the saliva.

Taking this for granted then, viz: that the elements, not necessarily the proximate principles, that are found in tartar (I have used the two terms, tartar and salivary calculus, synonymously), are the components of the insoluble or inorganic portion of the saliva, we will proceed to demonstrate how and why they are precipitated from it. First let us inquire as as to the chemical constitution of the inorganic principle of the saliva.

The fluid not being a fixed secretion, but depending in a great measure upon the physical condition of the system regarding the quantity and quality secreted, it is therefore not at all strange that there should be found such great variations in the analyses that have been made. By comparing several analyses made by the best authorities and averaging them, we find that about five per cent. of the mixed saliva consists of solid matter; now deducting two per cent. for mucus and epithetium, we have three per cent. consisting principally of phosphate of lime, free soda, and the alkaline lacates of lime, soda, and potassa, but observe no *carbonates*, whereas in most cases tartar or salivary calculus is composed of from ten to twenty per cent. of carbonate of lime. Now from whence is this substance derived, it not being found in the saliva? We shall try to account for its presence before we are through.

The above then, may be considered a fair statement of the chemical constitution of the solid portion of the saliva.

Now let us look for a moment to the chemistry of tartar. We find that the most reliable analyses gives from sixty to seventy-five per cent. as strictly inorganic matter, the balance being made up of mucous, fibrin, epithetium, and water. The inorganic portion is that with which we have to deal.

Now comes the main question, and in fact, the only one that is suggested by the heading of this article, viz: how is the phosphate of lime precipitated, and what is the origin and cause of deposition of the carbonate of lime that is found to compose a large per cent. of tartar, but which does not exist in the mixed saliva.

As to the first part of the question, we have seen that the phosphate of lime exists *as* phosphate of lime in the saliva, hence it is simply precipitated from that fluid, undergoing no chemical change. The saliva from all the glands, the parotid,

the sub-maxillary, and sub-lingual, while being secreted, and while passing from the mouths of their respective ducts is normally alkaline, owing to the presence of the alkaline lactates and the free soda, but after it has once become mixed, or even as soon as it becomes exposed to the air it is immediately changed from an alkaline to a neutral or slightly acid fluid, which can easily be proved by any one with litmus paper. This change may be brought about in two ways: First, The acids resulting from the puntrefactive decomposition of particles of food or epithelium, the presence of which is the chief, if not the only cause of dental caries, coming in contact with the saliva would instantly unite with the free soda, and if powerful enough, decompose the lactates, setting free lactic acid and uniting with the bases, forming salts; thus if hydrochloric acid were present there would be formed the chloride of calcium, sodium, and potassium, with the liberation of lactic acid.

Second, Or, the neutrality or acidity might be brought about by the carbonic acid which passes off from the system in large quantities by each exhalation of the air from the lungs. This coming in contact with every portion of the saliva as soon as it is emptied into the mouth, would tend to transform it immediately to an acid fluid, and particularly would this be the case in the mouth of one who exhaled through this cavity instead of the nostrils.

The saliva now being changed chemically, the condition favorable to the solution of phosphate of lime of course are not present, and this substance is precipitated as an insoluble powder. It now finds its way between the margin of the gums and necks of the teeth, and is slowly but constantly deposited, first in the interstices in the enamel, and thus gets a firm hold, and then layer upon layer is piled on, until in time, if nothing interferes, there is formed a huge mass, which becomes the seat of disease and corruption, and even of animal life (infusoria).

Now concerning the latter part of the question, from whence is the carbonate of lime? We have already seen that the mixed saliva is slightly impregnated with carbonic acid coming from the lungs, this then would act at once upon the lactates of lime, soda, and potassa, forming carbonates of them all, and we would have carbonate of lime, carbonate of soda, and carbonate of potassa.

Now it is well known by all who studied chemistry that the carbonates of the alkali metals such as potassium, iodine, ammonium, are soluble, while the carbonates of the alkaline earths such as calcium, strontium, and barium, are insoluble. The carbonate of lime belonging to this latter class and therefore insoluble, would be precipitated as a white powder, and like the phosphate of lime, would lodge in all protected places on the teeth, and with it make up the bulk of tartar as found in the human mouth.

During sleep the conditions are most favorable for its rapid formation; it is then that the parts are in almost perfect rest, hence it remains where deposited; now it is that respiration proceeds through the mouth and the supply of carbonic acid is abundant.

From the foregoing will be seen the importance of preserving the normal alkalinity of the saliva, for upon this poperty depends its power of retaining in solution the principal ingredient of tartar or salivary calculus.

FROM MY CASE BOOK.

Sept. 6th, 1871, Mrs. B. A. Holland, lady 45 years of age, strong and healthy, called to consult in regard to tumor in her mouth of long standing; find the space that should be filled by the four upper incisors occupied by a hideous looking growth, disfiguring the whole countenance, and producing great interruption of speech; teeth decayed and broken off at the age of fourteen years, and by the absorption of the alveoli, for the accommodation of this large growth have all dropped out, but that of the left lateral incisor; tumor dense and firm, of ten years growth; epulio as to location; benign as to character, and we classify it as epulo, cartilagineous, occupying the entire space of the four incisors laterally, and about the same, antero posteriorly, whilst its vertical extent is considerably more than the crown length of these teeth. On occlusion of the jaws, the lower teeth close upon the lower surface, which is deeply creased for their accommodation, causing it to pouch out, protruding the lips greatly, both above and below; is not painful and never has been, and the only inconvenience that the patient complains of,

is the difficulty of articulating plainly; decide to extirpate at once, to which patient objects till a physician is called in; with the latter's assistance proceed to operate, cut boldly through the cervical portion, being careful to cut as deep as possible in order to make thorough work of it; arterial hemorrhage, considerable; checked by torsion, lunar caustic and persulphate of iron. Dismissed patient with instructions to keep very quiet first day, and if no trouble occurred need not trouble herself to return under a week. All went well, healing proceeded rapidly, and all traces of disease disappeared, and at the present time remain so.

W. H. BARKER.

PELLA, IOWA, May 2, 1872.

[Dr. Barker kindly sent me the tumor for inspection. It is a FIBROUS TUMOR. The following description from *Franklin's Science and Art of Surgery*, will well apply to it: In addition to which I may say that these tumors are very apt to recur unless the bone from which they grow is well scraped, and it is also well to wipe the scraped part with nitric acid.—ED.]

"FIBROUS TUMOR—FIBROMA.

"*Characteristics.*—They are to be met with in various situations of the body, as in the testes and mamma; in the subcutaneous cellular tissue; in the periosteum; about the joints, and in the uterus, where they often attain their greatest magnitude; and in the antrum highmorianum, which is their most favorite locality. They are irregular in shape, are smooth, movable, and painless, their chief inconvenience resulting from their bulk, which is sometimes enormous, having been found to weigh as high as seventy pounds. They are composed of fibrous matter, as indicated by their name, the filaments crossing each other in such a manner as to form an intricate net-work, which is firm, dense, inelastic, and peculiar to this variety of tumor. They are reddish or purple, according to the amount of blood which they contain, occasionally presenting a silvery, glistening appearance. No reliable chemical examination has been made.

They may remain stationary for years, but are disposed eventually to undergo disintegration, becoming infiltrated and œdematous, breaking down into a semi-fluid mass, which passes on to superation, giving the part a malignant appearance. In

other cases again, they may degenerate into a spongy, calcareous mass, of a brownish color and hard consistence; but never undergo proper ossification. More rarely the interior of these growths softens and becomes absorbed so as occasionally to form cysts of large size, containing fluids of different shades of color. Paget relates the case of a very large cyst of this kind formed by the hollowing out of a fibrous tumor of the uterus, being twice tapped by mistake for ovarian dropsy.

Microscopical Character.—Microscopical examination exhibits nuclei and nucleated cells in immense numbers, which are of an oval, rounded, or spindle-shaped form. They may be very distinctly seen by previously treating the part with acetic acid."

Mechanical and Miscellaneous DEPARTMENT.

CELLULOID BASE.

Editors of the Missouri Dental Journal:

Having read an article in the *Dental Cosmos* from one "Ford," of Georgia, on Celluloid Base, I cannot let the opportunity pass without giving my testimony in relation to it. I was the first dentist in St. Louis who received the base and apparatus, and the first plate of the kind put up here was done by myself. At first I was much elated that something had at last been invented that would take the place of rubber, and I sent immediately for more material. I used the celluloid for every case that came in and rejoiced that I was at last free from the clutches of Josiah.

I continued to put up celluloid plates with great *ease* and satisfaction for about a month, when my high hopes were dashed by one of the cases coming back badly warped. Hoping that this might prove an exceptional case, however, I went to work and put up another case for the same mouth. In the meantime others came back, and so it continued till all came back and were replaced by the improved material, which was represented

as being more reliable and not liable to shrinkage, but after what I consider a fair trial with this base, I have been forced to the conclusion that it is nearly, if not quite worthless, and I am glad to see your JOURNAL take the stand it has, and hope it will continue to warn the profession of the various humbug inventions that are continually being palmed off upon the unsuspecting members of the fraternity.

In the article alluded to in the *Cosmos*, the author intimates that the cause of failure in Dr. Eames' cases was due to a want of manipulative skill, and ability as a dentist; he modestly informs us that he had no difficulty in manipulating the material himself. The relative standing of the two men in the profession make the *joke* in this case sufficiently apparent without comment. As to the cases which he enumerates as successful, I am satisfied that they will yet bring him to grief, unless there is something in the climate of Georgia that will work a miracle in his favor. I have put up at least twenty cases of the different kinds of celluloid and they have all failed. Now, Mr. Editor, I write this article to warn the dental profession that after having faithfully tried the celluloid base, I consider it an unmitigated humbug, and think all will do well to let it alone.

EDWARD HALE, JR.

AURORA, ILL., April 2d, 1872.

Editors of Missouri Dental Journal:

I cut from the *Chicago Tribune* of yesterday, "that the death from nitrous oxide" in New York, "occurred from improper administration of nitrous oxide.

In a former number it was stated that it occurred from "two inhalations of nitrous oxide," a thing next to, if not impossible; we say indeed impossible with nitrous oxide, pure. To-day I received a letter from the gentleman, Dr. J. B. Newbraugh, stating "that the lady in question did not take nitrous oxide, but having merely smelled of it declined to do so, but died from excitement." We are confident that if inhalers were all so constructed that it would not become necessary to tell the patient to "empty the lungs," and the assistant not compelled to turn any stop-cock, &c., but turn the gas into the inhaler unbeknown to the patient at the time of exhalation,

and when the patient is calm, having up to this time been breathing air, though with the lips about the mouthpiece. We say if this condition were always obtained, detriment from "excitement" would scarcely be reported.

Very truly yours,

O. WILLSON.

JOURNALISTIC.

The January number of the *Half Yearly Compendium of Medical Science,* contains a large quantity of reading matter collected with great care from the whole field of medical literature. It is a work of rare excellence, and deserves, as it doubtless has, the support of the profession.

The *Nashville Journal of Medicine and Surgery* announces that its size will hereafter be increased by an addition of sixteen pages without any increase in price—a good evidence of its prosperity.

In the *Dental Register* G. P. writes in favor of soft foil for filling teeth. He don't need the rubber dam, and if the cavity is flooded during the operation, would not be concerned about any little accident like that, but "would proceed leisurely to complete the operation."

Dr. Boswell, of Bristol, Ind., reports a case of alveolar hemorrhage, which he says had been treated by filling the socket with cotton saturated with *ferri per sulph.* without arresting the hemorrhage. He then carefully plugged up the alveolar with cotton rolled in powdered *Plumb's acitas* and tannin, and the hemorrhage stopped. He says "I am satisfied that the *Plumb's acitas* did the business." We heard an old quack Doctor once state that he always believed in the old adage *Vox populi nux vomica.* We are inclined to think that these two savans studied Latin at the same college, though the latter has the advantage in classic elegance. But aside from the *technicalities* we are admonished by this article that there are those yet in the profession for whose benefit it is necessary to discuss questions which we are, perhaps, too ready to neglect, under the impression that every one who reads is already informed upon such subjects.

In discussing such a case of hemorrhage as the one referred to in this article, we need only remark that a certain amount of pressure directly applied to the bleeding vessel will always control it. The cotton alone pressed into the alveolus with sufficient force to compress the vessel, and kept there by closing the teeth upon a small roller placed over it would have stopped the bleeding quite as efficiently as if it were saturated with persulphate of iron, or covered with pulverized tannin and sugar of lead. Not but that both, or either of these astringents will sometimes control a slight hemorrhage, but the result of this case, which was due, undoubtedly, to compression of the bleeding vessel, furnishes no evidence of the relative value as an astringent, of the articles used for this purpose, for it is well know that the persulphate is the stronger and more efficacious of the two.

During the discussions in the Mississippi Valley Dental Society, Dr. Watt stated that in effect the white decay resulted from the action of nitric acid, but that kind of decay where the earthy matter is dissolved and leaving the organic to a great extent, the destroying agent is hydrochloric acid, whilst in the black decay sulphuric acid was the cause, and lactic acid was the cause of the so-called spontaneous abrasions.

In a short editorial upon celluloid base Dr. Taft, in answer to the question, "Is the camphor easily removed from it?" says "Yes, very, by using the right method."

We can add our testimony to the Doctor's on that subject. A friend of ours was wearing a celluloid plate but complained of the camphor taste about it. We suggested that alcohol was a good solvent for camphor. The plate was placed in alcohol at night, and in the morning the camphor had all disappeared and no one would have supposed by looking at what remained of the plate that it had ever served as a base for artificial teeth. The Doctor in answer to the question, "Do you recommend celluloid?" says "Yes, if you must use some contemptible stuff for plates use this rather than rubber."

The *Dental Times* for April in its report of the proceedings of the Alumni Association of Pennsylvania College, has a paper by Dr. Marvin, of Brooklyn, New York, under the title of "Change not Progress." This is for the most part a very well written article

indeed, but some parts of it look a little like special pleading for the purpose of making out a case, and for fear that misapprehension as to some few facts might arise in consequence of some statements made therein, we notice a few points in which we must disagree with the author. He states that "in early days smooth pointed instruments were used to pack gold." Then deep serration; afterwards serrations more shallow, and then points merely file-cut, and finally smooth points again. Or to sum it up in the author's own words: "Observing those changes, we notice that the profession was carried by one leap from the old stand point of smoothness to the extreme of serration, and that by reversed gradation it has returned—actually returned to its starting point." Now was this brought about by their fondness of change, which is charged upon the profession, or would a better explanation be afforded by attributing the change to serrated points, to the introduction of adhesive foil, which it was supposed at least could not be advantageously worked with smooth instruments. But again has the profession gone back to the use of smooth points. We are inclined to think that this is far from being the case, and from present appearances we opine that the smooth point excitement is on the decline, and we might add that it has never extended sufficiently to disturb seriously the equanimity of the profession. Then again we are by no means willing to admit that heavy foil is going out of use again. We have no doubt but that the introduction of heavy foil was a real progress. The occasional use of heavy soft foil, years ago, had nothing in common with this movement. It is, to heavy adhesive foils that we allude, and we are confident that more than three-fourths of all the really first rate operators in the country to-day are using foils ranging from Nos. 20 to 60, although some may have given it a partial trial, and abandoned its use. Then, again, as for capping pulps with oxychloride of zinc. We believe that the practice stands to-day on a far surer foundation than ever before, and is far from being abandoned. Now we agree with the author, that all change is not progress, but in the case noted above we see a marked progress, the benefit of which we are by no means willing to give up. Mistakes are sometimes made in charging the profession with follies which can justly be charged to only a very insignificent proportion of its

members. A return to the old method of destroying and extirpating pulps would be a public calamity, and we are satisfied that no considerable proportion of the profession will in this respect retrace their steps. Further on the author says: "There can be no progress without change," which is self-evident, and we have less fear of too much than of too little action. As remarked before, this paper is well written, and does credit to its author.

The *Dental Cosmos* for April has a continuation of Dr. Flagg's article upon Dental Pathalogy and Therapeutics, but we shall be obliged to wait still longer for our gleanings.

"The Celluloid Base," by Arthur Ford, of Georgia, occupies considerable space. The Doctor has put up three cases, which have all proved successful, still he does not claim that he is preeminent as a practitioner, and is "confident that any intelligent dentist can accomplish" what he has done. He is much exercised lest articles reflecting upon the Celluloid Base might "injure the sale of the article."

Dr. Brown furnishes an artile on smooth faced pluggers and steel mallets. He advocates the steel mallet strongly. We have had no doubt upon that subject for several years, as no philosophical reason can be given for preferring any other kind, but nearly all of those in market are exceedingly awkward and uncouth, and illy fitted for the purpose. The steel mallets manufactured by Spackler & Co. of this city, although somewhat expensive, answer the purpose exceedingly well. As to the smooth points, we find no special advantages attending their use. Finely serrated points accomplish in our hand every thing that we have been able to accomplish with smooth points, and are not so liable to slip. It is a mistake to suppose that pits in fillings, as a general thing, are produced by the serrations—unless some of those monstrosities are used which we see in the Dental Depots, labelled "Plugging Instruments," and which were intended, no doubt, to answer a double purpose, it being rather difficult to determine whether they are better adapted for filling teeth or pulverizing the soil in a cornfield. We must add, however, that very few manufacturers have succeeded in producing instruments with serrations, shape and size of point and shaft that fulfill all of the required indications.

In the record of the proceedings of the First District Dental Society of New York is found a discussion upon the merits of Dr. Arthur's new work. All seem to agree that it is a valuable work, but few seem disposed to adopt his entire practice. In the discussion, however, is abundant evidence that the opinion expressed by us some months ago, that it would modify the practice in the future to a considerable extent was correct.

BURRING ENGINES.

The experiences of the last two or three years have sufficed to make it evident that an engine or lathe of some kind, for finishing fillings and preparing cavities is an absolute necessity in every well furnished dental office. The universal testimony in their favor by all who have given them a fair trial will undoubtedly influence others to obtain them. And more than that, patients will very soon discover that those who get along without one are but poorly equipped for the business which they propose to follow for a livelihood, and others will be sought who are up to the advanced spirit of the age. It is not merely a labor saver, but it enables the operator to do better work than he will do without its aid, and with much less annoyance to the patient. We are personally acquainted with the working of only three kinds of these machines. The "Helper Lathe," manufactured by G. V. Black, of Jacksonville, Ill., the "Morrison Dental Engine," manufactured and sold by Johnston Brothers, of New York, and the original "Pneumatic Engine." Black's lathe sells at $40 including 1 dozen burs and drills. Morrison's, as will be seen in Johnston's Brothers advertisement, comes at $60 with same number of instruments, and the Pneumatic Engine as enlarged and improved is sold at $105. There may be others with which we are unacquainted, but the utility of these have been established beyond doubt, and every dentist will advance his own interest by providing himself with one as soon as circumstances will permit.

INDIANA STATE DENTAL ASSOCIATION.

The fourteenth regular annual meeting of the Indiana State Dental Association will be held in the city of Indianapolis, on

the last Tuesday in June—the 25th, 1872—to which all dentists in good standing are cordially invited, and the profession in Indiana are especially requested to turn out in force, as a session of unusual interest is expected.

CALIFORNIA STATE DENTAL ASSOCIATION.

The Third Annual Session of the California State Dental Association will be held in San Francisco, June 11th, 12th, 13th and 14th, 1872.

It is expected that every effort will be made to make the Third Anniversary of the Society one of unusual interest and profit to all who attend.

S. W. Dennis, *President.*

A DENTIST WANTED.

We have been called on to send a good dentist to Rocheport, Mo., a thriving village of a thousand souls, surrounded by a rich farming country—a good opening for some enterprising young dentist.

THE RUBBER QUESTION.

In our last issue we inclosed a printed slip announcing the decision of the Supreme Court in the case of the Vulcanite Company *vs.* Gardner. This decision in favor of the company was rendered May 6, 1872, and on the same day Josiah, with his usual promtitude, and with an eye to business, issued a circular to the profession, giving the result of the Gardner suit, and counseling the dentists against any further fruitless opposition to his claim; also requesting us to come up like little men and pay his demands, as in honor and duty bound. As an inducement to comply with his request, he pledges the company to *reduce* the charge for license. If we continue to resist payment of his claims, he promises to *increase* the charge for license. He states in this circular that it is a well known fact that the Cumming's Patent has for several years past been the subject of litigation and contention between the Goodyear Dental Vulcanite Company and the dental profession.

"Not satisfied with the *repeated decisions* of the various circuit courts in favor of the company, the profession, by combination, finally carried the case of Goodyear Dental Vulcanite Company *vs.* Gardner to the Supreme Court, where, after an able argument, it was decided in favor of the company." These statements of Mr. Bacon in support of the Cumming's claim are certainly very ingenious, and were they true, would go far toward settling this little matter of strife between the company and the dental profession. But *is* it true that the Cumming's patent has for years been a subject of litigation, or that repeated decisions have been rendered on this *individual claim* in favor of the company? Have we had even *one* decision in favor of the company *independent of the Goodyear patent?* These are questions we would be glad to have some one, who is better posted than we, answer.

We know of but one case where the Cumming's patent was separated from the Goodyear claim, and that case was *withdrawn by the company.* We refer to the Newbrough suit. It will be recollected that in that case Dr. Newbrough was working to defeat the Goodyear claim, by the use of what he termed the Iodized Rubber. It will be remembered, also, that Dr. Newbrough obtained a patent some time in January, 1869, on the Hearing claim, for the application of rubber to dental purposes. Thus he was able to defeat the Cumming's claim, as two patents for the same thing could not be valid. Why we hear no more of the Newbrough patent is a little mysterious. Will some one clear up the mystery? It is evident from Mr. Bacon's circular that he does not consider the decision just rendered, as final, else he would hardly take the pains he has to prevent further litigation. We have no advice to offer in the matter, unless it be this, that we would not be hasty in accepting the terms of Mr. Bacon, if we could do without the rubber.

We think another test of the Cumming's claim will shortly be made. The end is not yet. E.

LIQUID GAS.

We have been using liquid nitrous oxide gas almost daily for the past few months, and do now unhesitatingly pronounce it the best anæsthetic we have ever used. We have tried it for

extracting teeth, for minor surgical operations, and especially for excavating sensitive dentine. We will give just one case. A lady, about twenty-two years of age, nervo-bilious temperament, had a natural repugnance and cultivated hatred for dental treatment. Her husband was very anxious to have her teeth put in thorough repair. There were six large, but not deep, cavities of decay in the superior incisors, and a dozen more in the bicuspids and molars. On the most gentle touch with an excavator to the decayed portion of a tooth, she would make a spasmodic jerk, or thrust at the hand of the operator, which would send the instrument hurling in the air. By giving the patient three or four inhalations of gas, we were enabled to entirely remove all the sensitive dentine by a few vigorous cuts of the excavator, and the whole painful part of the operation was completed, leaving only the smoothing of the borders of the cavity and the filling, and finishing the gold, the part of the operation of which she had no dread. We have had a good deal of experience with *ordinary* gas, and find that one-half the quantity of *liquid* gas will produce the same anæsthetic effect, and the latter is always fresh and ready for use in a neat and convenient form. M.

NOTES AND QUERIES.

By contributing to this Department our readers will confer a favor, both upon us and the Profession generally. Send in your queries. Be brief and to the point. Practical answers are also solicited, which will appear in the succeeding Nos. Give us your replies in good season.

RUBBER LICENSE.—Can the Dental Vulcanite Company oblige a dentist to pay for a six months license when he does not want to use it but three or four months? Can they make him pay double fee because he did not sign their license for last year? Is a dentist who has no license should repair, or put new teeth on an old rubber plate, or make over a rubber plate that he made while he had a license, would he be liable for infringement?

VULCANITE RUBBER.—What is the cause for the small pits in the surface of rubber plates made from the star rubber? Is the whalebone rubber all that is claimed for it, or any better than the star rubber? Is the black rubber better than any other, and what is the difference between White's black rubber and the English. W. H. C.

BLACK RUBBER PLATES.—How can the objections to these plates on account of color be overcome. C. W.

CELLULOID BASE.—Of the different colors of this material which is the best? E. H.

THE FOLSOM FLEXIBLE EDGE.—Is the Folsom Flexible Edge durable, or of any practical value. S. O.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] JUNE, 1872. [No. 6.

[*From the Western Lancet.*]

ON SOME SANITARY QUESTIONS.

BY H. W. BOONE, M. D., *Prescott, A. T.*

In these days of universal knowledge, we can seldom pick up a paper without seeing some allusion to the laws of hygiene, and every intelligent person thinks that *he* has a fair amount of information on the subject. Unfortunately, however, we seldom see any judicious application of these laws, and persons go on in their old ways as if nothing better could be done. Few persons either know or care as much as they should about the laws which govern their health; and it is extremely desirable that the general community should have distinct and practical views on these subjects, and be impressed with the importance of putting them into practice.

In our new States, building is continually going on, new towns are springing into existence, old ones being enlarged, and the health of the present and of future generations of the people will depend to a considerable extent upon the judgment with which the permanent habitations of these communities are placed and constructed.

In the great cities of the world, the subjects of water supply, ventilation, and drainage have of late years received much attention, and the care bestowed upon them has shown results in a lessened mortality among the population. It is from the statistical reports of large armies, however, that we are enabled to get the most decisive evidence on this point; and in "Parkes'

Hygiene" there is a very conclusive report on the subject. During the years 1826–1846 the annual mortality of the English army was about 17.68 per 1,000 of strength. During the years 1859–1863, the mortality ranged from 9.965 to 8.86 per 1,000 in the last years. These remarkable results were not peculiar to the English army. In France in 1823, the loss was 28.3 per 1,000; in 1846, 19.9, and in 1863, 9.22. The Russian army lost before 1857, 39; but from 1857–1861, only 18.7 per 1,000. In other armies the same rule holds good. Fevers (chiefly typhoid, in all probability) and phthisis were the great causes of mortality. We are told that other conditions, such as age, time of service, invaliding, etc., were about the same, and were duly considered; and there can be no doubt that this most extraordinary diminution of mortality, in the later series of years over the earlier period, is due to the wise and judicious application of the laws of hygiene. When we have at our hands the means of producing such results, it is well worth while to inquire into some of the most important points which are needed to bring about this great improvement.

One of the first matters to be considered is the supply of water. If this supply is in sufficient quantity for ordinary uses, and has no bad taste, most people are content to look no further, and yet what a potent source of good or ill depends upon the proper treatment of this question. The water should be supplied in such abundance that every one may have enough for drinking, cooking, washing, bathing, house-cleaning, and every conceivable use to which it is applied. This will take not less than sixteen gallons per head per diem. In towns, for sewers, ten gallons more per head are required to insure the perfect removal of the sewage. Except in our cities, where water has been supplied in abundance by engineering works, very few houses have water as abundant and easily accessible as it should be; and one great cause of disease is the lack of personal and household cleanliness, especially among the poorer classes, due to the expense or difficulty incurred in obtaining the needful amount of water. The sources of and the purity of the water which we drink and cook with should be looked after much more carefully than they are. The conclusions of Dr. Parkes, based on a study of the subject, are as follows:

"An epidemic of diarrhœa *in a community* is almost always owing either to impure air, impure water, or bad food. If it affects a number of persons suddenly, it is probably owing to one of the two last causes, and if it extends over many families, almost certainly to water. Diarrhœa or dysentery constantly affecting a community, or returning periodically at certain times of the year, is far more likely to be produced by bad water than by any other cause. A very sudden and localised outbreak of either typhoid fever or cholera, is almost certainly owing to the introduction of the poison by water. The same fact holds good in cases of malarious fever, and especially if the cases are very grave, a possible introduction by water should be carefully inquired into. The prevalence of Lumbrici, Guinea worm, or Bothriocephalus latus, should always excite suspicions of the drinking and bathing water."

Even in an economical point of view, the use of pure soft water is of importance, inasmuch as more soap is needed in washing where hard water is used. It has been estimated that in the city of London alone, the extra amount of soap used on account of the hardness of the water is equal to a cost of *two million five hundred thousand dollars annually*. As this cost tempts people to be less particular about cleanliness, health is thus affected.

All water contains more or less solids, of which carbonate and sulphate of lime, carbonate of soda, chloride of sodium and salts of magnesia and iron are the most common, and these within certain limits are not hurtful. Indeed, a good deal of the carb. of lime or soda, and of several other salts, may exist in drinking water without producing any ill effects; but the sulphates of lime and magnesia, and of the chlorides of calcium and of magnesium are injurious in small quantities. Water contaminated with animal matter, especially when of fæcal origin, and vegetable organic matter, when derived from marshes, is injurious. Almost all organic matters of animal origin in decomposing produce ammonia, nitric and nitrous acids, and the waters are rich in nitrites and nitrates. The most common sources of impurity in water are derived from the dwellings and the trades of men. Shallow wells are apt to be contaminated by floods carrying in surface impurities, and by sewage soaking

from cess pits; the soil filters the water to a certain extent, but after a while loses its power. A well drains the ground around it in the shape of an inverted cone in proportion to its depth and the looseness of the soil. In a loose soil, a well of sixty or eighty feet will drain a large area, two hundred feet or more. As there is now no doubt that typhoid fever, cholera and dysentery may be caused by water contaminated by the evacuations passed in those diseases, and animal organic matter, it is necessary to be on the lookout to detect and prevent these sources of disease. Wells should be covered, a good coping put around to keep detritus from being washed in; they should be at a distance from cess pits and dung heaps, and no sewer should pass near them. Springs should be protected in the same way. In case of a river, we must consider if there are causes of contamination by excreta or from marshes, the water should always be taken at a part of the stream above where the town outlets are situated. Where water is conducted through pipes, and especially leaden ones, it should never be allowed to stand long in them. If allowed to flow freely and often, the current will keep it pure. In examining water, taste is unreliable, as organic matter when dissolved is often quite tasteless. Decomposing animal matters must be suspended or dissolved in large quantities before they will give a fœtid smell. But little information can be derived from the mere *physical* examination of water, and where there are suspicions as to its character, it should be examined chemically, and also by the microscope.

It is important to know what quantity of air must be supplied hourly so to dilute the products of respiration and transpiration from the body, or of the combustion of light as to keep the air pure and fresh. This has been answered both by calculation and experiment. Taking the carbonic acid of respiration as a convenient measure, we have the following calculation: A healthy adult man breathes out 40 volumes per 1000 of CO_2, in addition to an undetermined amount of fœtid organic matter and watery vapor to saturation; that is to say, about 0.5 or 0.6 cubic feet of CO_2 and 136 grs. of watery vapor are eliminated per hour, or from 12 to 16 cubic feet of carbonic acid gas in 24 hours. To dilute the expired air so that the amount of CO_2 shall be reduced to 0.4 per 1000, more than 100 times the

volume of expired air must be supplied, or per hour 16.66×100 =1,666 cubic feet. But as the added air contains some CO_2, and as the exhalations from the skin require to be also diluted, at least ½ more must be added, which brings up the amount to 2,082 cubic feet per hour. General Morin, from analysis of all the observations made in Paris, and from experiments of his own, gives the amount of air needed per head per hour in temperate climates as follows: In barracks during the day when only partially occupied, 1,059 cubic feet, at night 2,118 cubic feet; workshops and theatres, 2,118 cubic feet; hospitals from 3,000 to 6,000 cubic feet. These are the least amounts required to keep the air pure, but of course a greater supply would be still better. Wolpert calculates that for every cubic foot of gas 1,800 cubic feet of air must be introduced to properly dilute the products of combustion. A common gas-burner will burn nearly 3 feet per hour, so the amount of air needed to dilute the products of the combustion can easily be calculated. A cubic foot of coal gas produces about two cubic feet of carbonic acid, besides other substances in its combustion. Nearly as much air must be introduced for the combustion of one pound of oil as for ten cubic feet of gas to keep the air perfectly pure. In order to keep the air pure it must be continually changing, and the air that enters must be pure. At a temperature of sixty degrees, a rate of movement of one and one-half feet per second, nearly one mile an hour is not perceived, a movement of two and one-half feet per second is not perceivable by some persons, more than this gives a sensation of draught. The air should be well diffused through the room, and must be removed at once so that no person shall breathe his own expired air or that of another person again. These rules should be remembered in the construction of all buildings, whether used as dwellings, offices, workshops, or places of public entertainment.

In securing a healthy location for building it is pretty generally understood that the site should be somewhat elevated, with no damp or marshy spot in the immediate vicinity; that it should be sufficiently exposed to the sun's rays, and be so located as to favor natural drainage. But it is also very important to study the prevailing direction of the wind, and be sure that the house or town does not get a current of air from the surface of some

marsh or low grounds in the neighborhood; malaria will drift with the wind for several miles, and especially if the conformation of the country, as for instance a valley or ravine, gives it a channel, and prevents the diffusion which takes place in open country. While almost any variety of hard rock and moist sands make a healthy building site, clay, dense marls and alluvial soils are always to be looked upon with suspicion, as the water neither runs off nor runs through them, the locality is always damp, and, as much vegetable matter is frequently mixed with the soil the water is impure, the air is moist, and generally loaded with impurities. The degree of density, friability, and penetration by water, is easily ascertained in both the surface and subsoil. Deep holes six to twelve feet should be dug and water poured on portions of the soil. Holes should be dug after rain and the depth to which the rain has penetrated be observed. In this way the amount of dryness, the water level, and the permeability are ascertained. In any spot chosen for building the ground should be drained with drain pipes; even in dry soils this is to be done, especially where the rainfall is heavy. The drains should be at the depth of from four to eight feet and twelve to eighteen feet apart. A good outfall should always be secured in choosing a location. If there is no outfall, drainage may be carried into deep pits, but *only* where circumstances compel the erection of buildings in low situations. These drains are intended to carry off subsoil water; surface water should be provided for by shallow drains. Brushwood should be cleared away, but trees left. In erecting a building the surface should be levelled, holes filled in, and those parts of the surface on which rain can fall from houses be well paved, and with good side gutters. It is of the utmost importance that the ventilation of *every* part of the house should be good. There should be an immediate and perfect sewage removal, a liberal supply of water for all purposes, and a construction of the house which shall insure dryness of the foundation, walls, and roof. In laying the foundations of a house, where a cellar is built, care should be taken to use courses of hard stone or asphalte, in the walls, to prevent water from rising, and there should be openings for thorough ventilation. Where there is no cellar the house should be raised from the ground, and the air allowed to pass

freely under it. The form of a house is of course matter of taste or convenience, but the arrangement should be such as to secure sufficient air space (and the more superficial space also the better), requiring not less than 1,000 cubic feet to each person in any of the living rooms. The ceilings should be tolerably high, the windows large and opening at the top as well as at the bottom, and so arranged as to secure a cross ventilation. It will not do to trust to doors and windows alone for ventilation; every room should be ventilated by openings in the walls, connected by tubes with the outer air, at the rate of two square inches to every one hundred cubic feet of room space, or twenty inches of section area for every 1,000 cubic feet, the cold air inlets to be placed in the sides and usually part way up the walls, and the outlets of the same dimensions in the corners of the room at the top. These outlet openings should open into tubes carried up to the top of the house; they can be made of wood, round or square, and as straight as possible, with perfectly smooth internal surfaces to reduce friction to a minimum. These tubes should be covered by a cowl or hexagon, turning from the wind to aid its aspirating power and prevent the passage of rain into the shaft. Several forms of valves have been invented for these openings in the walls, of which the "Sherringhaur" is the best. The great advantage of these inlet and outlet openings is, that they bring in perfectly fresh air from outside and discharge the foul air clear above the top of the building, where it can do no harm, and there is a perpetual current of air flowing, not checked as is the case where doors and windows are depended upon for ventilation, for these latter may be so closed as to shut off all current. The inlet openings with a proper valve may be partially closed to modify the draught. Particular care must be taken that halls and stairways shall be well lighted and freely ventilated, with separate openings of their own. The different rooms in a house open on these passages, and unless they are well aired they only serve the purpose of carrying foul air about and contaminating every place equally. How often upon entering a house are we greeted with a collection of effluvia, where the odor of yesterday's dinner, the smell of excreta, and that peculiar damp mouldy smell which pertains to all ill-ventilated places, tell their own story,

and prepare us to look for faulty construction and arrangements. The open fire-place is one of the most simple, and at the same time valuable means of securing a good current of air in a room. Dr. Parkes states:

"In a room I have examined the area of the throat of the chimney is 1.5 square feet; there is no down draught but an upward current, which, with a good fire, is four feet per second. The discharge then per second is six cubic feet, or no less than 21,600 cubic feet per hour. The capacity of the room is 2,000 cubic feet, so that a quantity nearly equal to the total air in the room passes up the chimney nearly eleven times per hour."

This shows the ventilating power exercised by a good fire-place of small size, without producing any discomfort to the persons in the room. Even in summer, when there is no fire, a chimney is an admirable ventilating shaft, and a constant current of air flows through it.

All sinks and water closets should be carefully trapped with a water joint, and the pipes so placed as to be of easy access, in case of repair being needed. As gases are largely formed, and always rise to the upper end of the sewer, there is great danger of their passing into the house in spite of traps. There should be plenty of openings into the drain sewer, and particularly just where the house drains join them so that the gases shall not press so hard upon the trap as to overcome the resistance. House drains may be ventilated to the best advantage near the closet by a pipe running up above the house. In country houses, where the sewage is drained off into a cess pit, this should be placed at some distance from the house. The privy must also be at a distance, and both far off from the well, if there is one. The earth closets now coming into use are cheap, and as they prevent effluvia and neutralize the effects of any poisonous excretions they are very valuable, especially in the treatment of diseases. The recent illness of the Prince of Wales (typhoid fever), which was clearly traced to the contamination from the sewers through the water closets, is yet fresh in our memories, and should make us very careful to guard against these sources of sickness. In towns and villages, after the town lots have been properly drained and sewered, it becomes the duty of the community to see that the public means

of removing the accumulations are sufficient. Here the question of proper water supply will usually come in. These remarks will apply to solitary houses as well as others, for many a country house is a den of sickness from its faulty construction and appliances, when it should be perfectly healthy.

The limits of this article do not allow a more thorough discussion of the subject, but it is hoped that what has been written will induce others to look into the matter, and to give the benefit of their knowledge and experience.

It is one of the duties of physicians, becoming daily more and more recognized, to take the lead in questions affecting the general health and welfare of the communities in which they reside, and it should be our pride and pleasure to spread an intelligent understanding of these subjects among all who come within the sphere of our influence. Special knowledge brings with it the obligation to be faithful stewards of the talent committed to us, and we are morally responsible for the use we make of it. It should be our aim and object to influence the public mind, so as to secure the passage of wise laws for the control of sanitary matters, which could protect all equally, and also prevent *one person from keeping a focus of disease* among his more prudent neighbors.

ON SOME CHEMOSMOTIC PHENOMENA AND A NEW THEORY OF FERMENTATION.

By O. Loew.

"Electrocapillarity" is the name given by Becquerel to certain chemical actions caused by the reacting of two different bodies through a membrane. Becquerel* has found that under these special conditions the chemical reaction is substantially modified. If a solution of sulphate of copper is placed upon one side of the membrane and sulphide of potassium upon the other —instead of sulphide of copper, metallic copper will be precipitated. Becquerel ascribes this unexpected result to the action of electric currents, and calls it "electrocapillarity."

In my opinion this name is not sufficiently definite, since the action of electricity is not required to explain such results. I

*Jahresbericht, 1866-68.

would propose the name "chemosmosis," because we have an osmosis accompanied by peculiar chemical decompositions. I found that without any artificial membrane such phenomena can be produced. If a crystal of sulphate of copper is placed in a test-tube or flask, and this then filled with a solution of sulphide of potassium of the proper strength,† the formation of a black crust of sulphide of copper will be first observed upon the surface of the crystal; as soon as this is formed, an ascending yellow current may be noticed, doubtless due to the formation of bisulphide of potassium, which is diluted by the water of crystallization of the copper-sulphate. If after about twelve hours the liquid is removed, the black lump crushed with care and then broken up, we find metallic copper in the interior: no part of the original crystal is left undecomposed. Here we have a clear case where the deposit of sulphide of copper takes the place of a membrane. That this deposit must possess a *peculiar molecular arrangement* to yield the aforesaid result, will be demonstrated at once, if we repeat the experiment with a nitrate of silver crystal. The first step is here also the turning of the surface of the crystal into a black crust of metallic sulphide, but we look in vain for the ascending yellow current. Neither do we find a similar result in the interior if we cut open the black lump after twenty-four hours. We find then the interior almost unchanged, only a very small amount of metallic silver being formed.‡

Similar differences we find on pouring caustic potash over both salts; the copper salts will yield a loose mixture of black oxide and blue hydrate, and the decomposition is complete, while with silver nitrate we find under the thin layer of silver oxide the original salt *entirely untouched.*

As regards the molecular structure of the crusts of the metallic sulphides, it is evident that the crust of the copper salt must be provided with certain molecular interstices, which is not the case with the silver nitrate, since it does not contain any

†A solution too dilute works too quickly; a too concentrated one works imperfectly, retarding the osmotic motions considerably.

‡Very different is the action of sulphydrate of potassium, which produces a very violent and perfect decomposition of the crystal of nitrate of silver; the rising bubbles of sulphureted hydrogen gas do not allow the formation of a crust.

water of crystallization. If a crystal of copper sulphate is placed in the solution of sulphide of potassium, the copper sulphide formed takes the place of the group SO_4, Cu, while the water, having surrounded this group in a solid condition, becomes liquid and leaves in the precipitated crust of sulphide of copper interstices, through which other particles can move. In the next following layer beneath, the normal decomposition can only proceed, when the molecule of sulphide of potassium can penetrate such interstices to reach the interior, or when the molecule of sulphate of copper (dissolved by the entering water) can penetrate the crust to reach the exterior; but if these interstices are too small to permit such motions, then a "chemosmotic" decomposition will set in, provided the other conditions are favorable; the larger molecule split and thus give a partially modified decomposition: the sulphur of the potassium sulphide remains in the exterior liquid, forming bisulphide, while the potassium, uniting with the SO_4 group, precipitates metallic copper. In the case of the copper salt this movement is soon finished, while in the case of the silver salt this movement seems to be entirely arrested after a while; the interstices can in this case be only formed by the difference of the molecular volumes of nitrate and sulphide of silver, and are perhaps *entirely covered over* by several layers, or rendered at least smaller.

On application of caustic potash instead of sulphide of potassium to the copper salt, the metal is not separated, for several reasons: First. A body analogous to bisulphide of potassium cannot be formed under those conditions. Second. The intermediate formation of voluminous oxyhydrate of copper produces an entire change of the original positions of the molecules of copper, making the formation of a crust impossible. In the case of the silver salt, an intermediate formation of an oxyhydrate cannot take place, and the layer of oxide *protects the remainder* of the crystal from decomposition.*

Osmosis through these molecular interstices is in many other cases not only physical, but also chemical, since additional and

*Caustic soda shows a different behavior; it penetrates entirely the crystals, and after a while oxide of silver is found in the shape of the original nitrate This is, however, not surprising, if we compare the atomic volume of sodium =24.8 with that of potassium=45.2.

important duties are performed, which may explain many phenomena till now imperfectly understood. The obscure chemical actions which we observe in vegetable and animal cells, and which appear to be inexplicable, are always accompanied by osmotic processes, the contents of the cell being separated by a membrane from an exterior liquid of a different chemical nature; we frequently meet here with a production and separation of new compounds. As in the crystal every molecule occupies relatively an unalterable position, so there is a specific arrangement of the molecules composing the substance of the cellular wall, and between the molecules there are interstices. Where such molecular interstices do not exist, osmosis cannot take place. It is possible, if not probable, that these interstices are of different shape and extension according to the species of cells.

Let us now imagine that the cellular wall possesses molecular interstices smaller than the molecular volume of the exterior body, then the osmotic force can only be satisfied and an equilibrium established by tearing asunder these molecules and forming simpler compounds, provided the power of resistance is not too great.

As nitro-glycerine (relatively rich in NO_2 molecules) by a motion (blow) is broken up into simpler compounds, so is here for instance the sugar molecule (relative rich in OH molecules), by a shifting, pressing and stretching, broken into pieces, and this method of splitting may take a different course according to the shape and extent of the molecular interstices of different cell-species, provided the *chemical* nature of the sugar molecules permits it. This view furnishes us a simple explanation of the alcoholic and the lactic fermentation of the sugar, the cell being different in each case. A. Meyers' ideas about fermentation, published this year in *Poggendorf's Annalen*, cannot be considered as an explanation, as he falls back entirely upon the principle of vital force, and pronounces the fermentation as the consequence of cellulose; he cannot explain why sugar can undergo several quite distinct kinds of fermentation, neither can he show how the fact, that under peculiar conditions the yeast may diminish in weight while fermentation is going on, is to be placed in accordance with this theory.

Among all theories of fermentation, Liebig's appears as yet the simplest and most natural; however, his otherwise ingenious hypothesis leaves several points unexplained, for instance, how is it that sugar can undergo more than one kind of fermentation ?

Mitscherlich's contact theory, and Pasteur's views, pronouncing the fermentation as the consequence of the vitality of the yeast-plant, say too little to yield a true understanding of that process.

"Chemosmosis" may be recognized as taking an active part in many other instances; as, for example, the action of the "periosteum" in physiology, or the reduction of carbonic acid and water in the vegetable tissues under the influence of the sun's rays. Further investigations in this direction may throw more light on many obscure phenomena of physiological chemistry. —*American Chemist.*

Operative and Surgical Department.

THE DENTES SAPIENTIAE.

By J. P. Wilson, D. D. S., *Burlington, Iowa.*

Many persons have very erroneous ideas with reference to these teeth. It is not uncommon for dentists to say to their patients, "the wisdom teeth are of no account; it will not pay you to have them filled." Physicians almost universally pronounce them worthless. This impression is very general, both with the medical and dental professions, and in this way the public has been educated to believe that they are of no value. I wish to offer a few thoughts on this subject.

That these teeth are naturally of poorer material than others, I do not believe. But every observer must admit that they are liable to decay soon after they are erupted. It must be admitted also, that *all* the teeth are more in danger of decay at the time and soon after their eruption, than they are in subsequent years.

A wisdom tooth that has just emerged from the gums is in an immature state. The lime salts are not thoroughly hardened. We will find on an examination, that where the enamel folds together on the grinding surface of these teeth, there is frequently a fissure sufficiently open to receive the point of a small excavator. On cutting away these folds of enamel, it will be found that the dentine is quite soft—not decayed—and in this immature state, they *are* more liable to caries. But let it be remembered that the first and second molars at the time of their eruption, are, also, more in danger of caries than they are at the time of the eruption of the third molars. In other words, the first and second molars are fully developed and matured, at the time the third molars are erupted—the former have passed the most critical period, the latter have not.

The wisdom teeth decay more frequently on their buccal surfaces than the other molars. This is, doubtless, owing to their unfortunate location. In many mouths is is quite difficult to remove particles of food from that side of the teeth. We frequently find collections of decomposed food in this location, even in the mouths of persons who use the brush regularily. This condition, of course, soon brings about disintegration of the enamel, and the destruction of the tooth soon follows.

If a young person has lost the first or second molar before the third molar is due, we should await the appearance of the latter, with considerable interest, and on its arrival, use the utmost care to preserve it until it is fully matured, and after that it will be no more liable to decay than any other molars. The space that has been formed by the extraction of the first or second molar, will be almost, if not entirely closed, by the wisdom tooth inclining forward, and resting finally almost in the place formerly occupied by the second molar.

In some instances the maxilla is not sufficiently developed to receive the entire set of permanent teeth. In such cases the third molars are a source of great annoyance, sometimes irritating the surrounding parts to such en extent, as to cause extended inflammation, and sometimes a free discharge of pus follows. In *such* cases I should recommend the extraction of the offending member.

The points, then, I wish to make are these: not to extract wisdom teeth, *because* they are such, nor to neglect filling them on the mistaken idea that they are naturally worthless, but to extract them *only* when their absence is more desirable than their presence.

VOLTAIC ELECTRICITY AND AMALGAM FILLINGS.

By E. C. Chase, D. D. S., *Iowa City, Iowa.*

Every reader of this journal knows that the only requisites of a voltaic battery are two dissimilar metals, connected by a conductor, immersed in acidulated water.

The common experiment of placing a piece of zinc and a copper coin in the mouth and then bringing them in contact, affords an illustration of a battery of this kind. While the metals are separated from each other nothing unusual is observed, but as soon as they are brought in contact a decided metalic taste is experienced, showing the generation of electricity.

Place a strip of zinc covered with mercury in a glass vessel, and opposite to it but not in contact with it, put a sheet of copper, and then fill the vessel with water and sulphuric acid, six or eight parts of the former to one of the latter. Now in connecting these two metals at the top with a copper wire, we will at once have a current of electricity established, flowing from the zinc through the liquid to the copper, and over the wire to the zinc again.

Hydrogen will be liberated at the copper plate in considerable quantities, while the connection between the two metals is maintained by the copper wire, or while the battery is in operation. The zinc is amalgamated to prevent the acid from acting upon it, and the impurities such as particles of iron or other metals that it might contain, and thus forming numberless little batteries all over the surface of the zinc.

Now by the indiscriminate use of amalgam for filling teeth, we as dentists construct more voltaic batteries right in the mouths of human beings than we would care to acknowledge, and if they were but as powerful as they are numerous we would be enabled easily to distinguish an amalgam patient from a gold one, by the incessant flashes and innumerable sparks of electrical

light, followed by constant peals and rumbling of thunder which could be seen and heard, proceeding from the mouth on any dark night, but happily for us, yet to the sorrow of the patient, the electric force confines itself to the teeth and contents of the mouth, instead of making the latter a luminary to guide the poor credulous victim of misplaced confidence to a land "flowing with milk and honey," as we are told did the pillar of fire in ancient days.

I say the indiscriminate use of amalgam. There are times and places when we are not only justified but compelled to use it from the nature of the case, and to neglect to do so would be morally criminal: again, there are other times when it would be equally criminal to make use of the stuff. Here is a case. We have, if you please, the distal surface of the first right superior molar to fill, the inside surface of the second molar of the same side and jaw, is already filled with gold. We have our cavity prepared, and the patient places full confidence in our ability and honesty as a dentist and gentlemen, and expects us to use our own judgment in regard to the material for filling; expects and is willing to pay for the *best*. Now what shall we do. We know that to put in a good gold plug will tax us to the utmost of our skill; will require perhaps an hour or more of hard labor, both mental and physical. We are in a hurry, having a country practice, two or three are waiting "to have some teeth filled as they have eight or ten miles to go to-night," and it is now the middle of the afternoon. We know that we can fill the cavity with amalgam in two minutes with very little inconvenience either to ourself or the patient. We choose the the latter course, consoling our conscience, if we have one, that just as likely as not the gold filling would have got wet if we had attempted it.

The filling is completed and the patient dismissed. Perhaps we never imagine that we have set up in that credulous mouth an apparatus which will destroy one or both of those teeth. We do not know that those elements of mercury, and silver, and tin, on the one hand, and the gold on the other, arranged in the manner we have them, and constantly moistened with *acid* saliva, constitute a machine capable of generating a fluid that not only has the power of overcoming the chemical affinities

existing between the elements composing the tooth substance, but by its subtle action can cause harmless bodies to so join in chemical union as to form the most powerful and destructive agents. This battery is in operation, the chloride of sodium ever present in the mouth is decomposed, the chlorine set free. Sulphuretted hydrogen and ammonia, probably, are present, resulting from the putrefactive decomposition of some organic matter left in the mouth, they are decomposed and abundance of hydrogen is liberated. Now these two elements, chlorine and hydrogen, bearing an ever burning love for each other, and affinities, that can never die, do not long remain in "single blessedness," but right now and here vow eternal fidelity, and are joined in matrimonial union, and now under a new name, *hydrochloric acid*, they fight side by side, becoming a powerful foe to the integrity of the tooth. Thus again is verified the old saying that "in union there is strength." Our patient returns in six months or a year, and we find to our chagrin the best proof of the ravages of some subtle force; both the gold and the amalgam plugs are badly decayed around the margins and their removal is necessary.

We may plead ignorant of the cause of this, but ignorance of a scientific truth in this day is a poor defence and will not stand. But suppose we have been taught the danger of such operations and did not heed the council, who then, indeed, can measure our guilt?

RETARDED DENTITION.

By J. Edward Line, D D. S.

In the Journal for the month of April, 1872, a correspondent narrates a case that naturally comes under the above head. He states that after taking certain precautions, he "was enabled to see that it"—the hard substance in question—"was a good sound tooth of the third dentition." Also that it was "in the place where the second left upper molar should have been, lying horizontal with the gum." The soundness of a tooth situated as in this instance, except in isolated cases, is unquestionable, but with regard to "third dentition," the unbelievers are by no means few. The position of the tooth as regards the dental

arch, is that assumed almost invariably by the third molar, in cases in which the second molar has been removed. The position as regards the mode of eruption, is that common to all teeth, not malformed, where assumption of place in the dental series is greatly interfered with, or entirely obstructed. The following case may prove interesting and instructive, now that the subject has been broached: A lady, is over sixty years of age, presented herself as a subject for oral renovation. Subsequent to the administration of an anæsthetic, the contents of both jaws—consisting of badly decayed teeth and roots—were removed, and the parts thereby rendered fit for artificial substitutes. These were inserted at the proper time and the patient went on her way rejoicing. Fifteen months after she returned complaining of an irritation of the gum covering that portion of the right upper maxillary which corresponds to the alveolus of the canine tooth. She felt positive that "an old root or fragment of bone had been overlooked." Close examination demonstrated the gum intact, though presenting inflammatory phenomena. Thinking the plate the whole cause of all the trouble, it was trimmed out in such a manner that it would rest lightly, if at all, on the affected part. The patient was discharged, but only to return in a few weeks with the soreness greatly increased. The parts were again examined and found to present a spread of the inflammation, and in its center a point of ossific matter, the real nature of which could not, without extraction, be determined. Removal of whatever said ossific matter might prove to be, was resolved upon. The result of the operation was a right upper canine, perfect in size, in color, and in form, except that the cusp. to the extent of three-sixteenths of an inch had been removed by absorption, undoubtedly induced by the plate and kept up by continuous pressure. The tooth presented two peculiar features for examination. The first of these was the want of the cusp. and the presence of a highly vascular mass, which more than filled two-thirds of what remained of the crown. The dentine of the crown was beautifully excavated and the marginal opening, composed of enamel, delicately serrated. The mass which filled the crown and gained admission thereto by means of the cusp. opening, was continuous with, and a prolongation of the soft tissues surrounding the tooth.

Between the crown cavity and that of the pulp, there was a thin partition of bone, formed apparently without cessation by the pulp and as rapidly removed by the vascular contents of the crown. The second peculiar feature was a nodule of bone of a milk-white color, upon the lingual aspect of the root midway between the cervical portion and the apex. This nodule was prominent and well defined, and was suggestive of a cause analagous to that which produces exostosis. The position of the tooth was horizontal, as in the case the correspondent quoted, parallel with the alveolar ridge, the crown pointing forward; except as regards the long axis of the tooth its position cannot be recalled. It is well known to observing dentists that retardation of the canine teeth is not unfrequent. Such cases come under the eye almost daily. As a rule the temporary canines are still in place and show no disposition to give way to their successors. In such cases it is considered good practice to let them remain until progress on the part of the permanent canines can be noted. The query which here suggests itself is: How many cases of doubtful eruption of the permanent canines would terminate successfully—that is, in eruption and assumption of proper place—if their predecessors were artificially removed? This, of course applies only to cases in which the temporary canines persist two or more years longer than the average time given for their shedding. The permanent canines like none other teeth, occasionally develope in such position, that no matter how favorable for eruption the case may be, they cannot possibly assume their proper place in the series. If their position previous to eruption could be ascertained, then it could be readily determined, whether or not it would be policy to remove that which, in great part, impedes their progress—the temporary canines. The opposite of this being true, that their position is undeterminable, the conclusion is, that the risk involved in the extraction of the temporary canine is altogether too great, for possibly the series may be broken, never, except by artificial means, to be repaired.

Rochester, New York.

[*From the Dental Cosmos.*]

REPLY TO THE ESSAY OF DR. O. A. JARVIS ON DR. ARTHUR'S SYSTEM OF THE "TREATMENT AND PREVENTION OF DECAY OF THE TEETH."

By Robert Arthur, M. D., D. D. S., *Baltimore, Md.*

The author of a book does not usually reply to the criticisms it may call forth. If his work is a formal treatise on a scientific or practical subject, he is supposed to have argued his case as fully and exhaustively as he is capable of doing, and if critics are unjust or incorrect, he trusts to the book itself to vindicate its own character. This, on the whole, is a very good rule, and I should have no disposition to depart from it if I did not consider the system of treating dental caries, to which I have recently called attention, of so much importance to the welfare of the community, and the best interests of the dental profession, as to be very unwilling, silently, to see the character of the system misstated. I have, indeed, challenged discussion of the method referred to, and hold myself bound to endeavor to meet any objections made to it which seem to merit attention. I propose, therefore, to make some reply to the strictures of Dr. Jarvis, for the benefit of those who have not read my treatise, as I have but little apprehension that the book itself will suffer very seriously from his paper, in the estimation of those who have carefully considered the facts it offers and the reasoning based upon them.

In Dr. J's short introduction to his article, I am surprised to find that he is under the impression that my work is "certainly calculated to weaken the confidence of the people in dentists and dental operations." I find it difficult to understand the grounds upon which he bases such a statement. Certainly he does not find them in the work in question. It is nowhere in it pronounced, as he states, that the "plan of filling is a failure" as applied to the proximate surfaces of the molar and bicuspid teeth. I have, it is true, pointed out the great difficulties attending the operation of filling for the preservation of these teeth when caries has been permitted to attack the proximate surfaces and allowed to make any considerable progress. I have proposed that greater care should be taken in the management of the teeth of children so as to simplify this operation when re-

quired, and in certain cases to substitute other treatment which I have endeavored to show to be preferable when it can be adopted. I have stated—and who will attempt to deny the truth of this statement?—that large numbers of persons engaged in the practice of dentistry are incapable of saving the teeth after they are partially destroyed by caries, or if capable, are unable to command sufficient compensation for the labor, skill, and material necessary to accomplish the best results. I have shown how imperfectly dentistry is but too commonly practiced, and have endeavored, in some degree, to place it in the power of people generally to distinguish between capable and faithful practitioners, and the men who, in the positions of dentists, not only plunder but irreparably injure those who trust them. Every word I have said has been in the true interests of the dental profession, and I challenge the production of any portion of my book which will show to the contrary. I have not space in this article, however, to pursue this subject further, but I hope on some other occasion to say more in regard to it, and to say it much more strongly than I could venture to do in the publication in question.

I will not undertake to reply to Dr. J.'s article in the order in which it is written, but will take up such of the points he has made as seem to merit attention. His views are not uniformly stated with clearness, and brief references are made to points which it would occupy more space to notice than I can command, and to which obvious replies will occur to the reader.

Dr. J. has correctly stated the general principle of the system I have advocated. This is the artificial permanent separation of teeth closely in contact, in such a manner as to render them in a great measure self-cleansing, when caries has attacked their proximate surfaces, or when, from general considerations, which every well-informed dentist should comprehend, they are reasonably certain to be attacked.

The first ground of objection Dr. J. finds in this system, or in at least to the manner of making the separations as I have advised, is "the injury to the gums and processes by the pressure of food in the act of mastication."

Dr. J. ignores the fact that I have already met this objection, and does not notice the reply made. He says: "There is posi-

tively no weight in the testimony of a *few* patients that they experience no inconvenience," etc. As the extract is short, I will insert here the reply to which I refer. Among other objections noticed, is:

"The annoyance and inconvenience experienced during the act of mastication as a consequence of the separations.

"The same reason given for the early separation of the teeth, viz., the avoidance of the pain of the operation, applies here also. If the teeth are permitted to decay so far as to require filling, the spaces made are frequently a source of very great annoyance, as the width and form of the separations must be modified in accordance with the character and extent of the decay. It is commonly the case, therefore, that the contact of certain kinds of food forced between them in the act of mastication, produces so much irritation of the gum as to keep it in a constant state of slight inflammation and exalted sensibility. In many instances such teeth, from this cause, become nearly useless. The dentine, too, becomes sensitive as the result of decay, and the contact of anything above or below the temperature of the mouth may give severe pain. But the separations, made at a period so early that they can be rendered great or slight at pleasure, are rarely the cause of any serious annoyance. In regard to this feature of the matter, I have made the most careful inquiry of persons whose teeth have been preserved by the means described, and the almost universal reply has been that no inconvenience is experienced from this cause. Sometimes, but rarely, complaint has been made, but the difficulty has amounted to mere annoyance. The exposed dentine may become more or less sensitive after it is first exposed, but this is at once relieved by an application of powdered nitrate of silver to the affected surfaces, and after the calcification of the fibrillæ it entirely disappears."

The reader will at once perceive that Dr. J. has not correctly stated the testimony upon which I rely, when I declare that the objection he makes and that others have made has really no force or weight.

Dr. J. rather ignores the value of any testimony of this character, no matter how numerous the witnesses may be, and

intimates that, however strong their statements that they suffer no such inconvenience as he describes, from the separation of their teeth, they are not to be relied upon, as people may get used to more serious trouble than this. But it may be said that if persons who have undergone this treatment become so well accustomed to the damage done that they are no longer conscious of their sufferings, it amounts to the same, practically, as if they did not suffer at all.

But while Dr. J. is reluctant to "appeal to the people for their verdict," as to their own experience in a matter of this nature, he is willing to accept, as testimony, as reliable as any I have offered, the "universal horror and undying dread with which they have regarded this practice for thirty years, and which is often referred to in this book as prejudice." He loses sight of the fact that the system of separating the teeth, as I propose, has not been practiced for thirty years. It has not been practiced at all, until recently, so far as I am aware, by any one but myself. The teeth have been separated, by filing, for a much longer period—long, indeed, before either Dr. J. or myself were born. But until recently it has not been attempted except when caries was observed to be actually present. This, as I have explained, changes the conditions materially. The evil results to which Dr. J. refers are due not to the making of the separations, as I have advised, but to making them under very different circumstances.

Now, let us endeavor to ascertain how much of prejudice and how much of testimony there is in this "universal and undying dread" of the artificial separation commonly known as "filing" the teeth, in the treatment of caries, and which has been, and is by Dr. J., confounded with the plan I propose. Every one knows what prejudice means. It has been defined as "judgment before knowledge, and not founded on evidence." One phase of the prejudice in the case under explanation is against the removal of the enamel as a result of filing or permanently separating the teeth. The public, and, strange to say, many members of the dental profession, are satisfied that the enamel protects the teeth from caries, and that the exposure of the dentine must necessarily result in an attack of this disease. I

have shown, and I defy controversy on the point, that this is a fallacy. Is not such a judgment prejudice?

Another prejudice is that this treatment applied to the incisor teeth means their disfiguration. That these teeth have been mutilated, in this way no one can deny. If the illustrations given in several editions of "Harris's Principles and Practice of Dental Surgery," and reproduced in the last, page 292, indicate correctly the manner in which these separations have been made, then I am not surprised that both the public and competent dentists should have a "horror and undying" aversion to such treatment. This, however, is not the practice I have advised. No disfiguration of these teeth is necessary in carrying out the system I have explained. It is not necessary to separate the incisor teeth in accordance with the illustrations in the work above referred to. If this is not prejudice, what is it?

There is another reason why the operation is regarded with so much dread, and that is because of its extremely disagreeable character. This I admit is not a prejudice, but I have explained a method of making the separations without employing the file, thus avoiding this very reasonable objection. I am satisfied that more effective means of accomplishing this object than those referred to, will soon be devised. I am already, indeed, with the aid of the burring and drilling engines now coming into use, enabled to avoid difficulties necessarily attendant upon the plan I have described.

Dr. Jarvis denies my statement that the incisor teeth may be treated in the way I propose, "without the slightest disfiguration." Before venturing to attempt to prove this, he obtains, in advance, the support of a "clerical" friend, who disposes of the statement referred to by a witty remark, which, although not professing to be extremely pious, I consider too irreverent, to use a mild term, to reproduce here. It may be said, by way of parenthesis, that other and higher considerations than good taste would have deterred Mr. J.'s "clerical" from employing such language as he has used; but, in these degenerate days, "clerical" gentlemen are to be found who say and do many things not exactly consistent with their holy calling.

After being fortified by the aid of his sapient and witty clerical friend, Dr. J. proceeds, in the following language, to show

the injurious character of my practice as applied to the incisor teeth.

"These teeth are provided by Nature with a thicker, heavier portion of enamel, and especially the linguo-proximate portion, often somewhat in the form of a scroll, with more or less of a depression in the center, or between the two enlarged portions of the enamel. The distance between these two extreme points is as great or greater than between the two points immediately anterior, often a little depressed, being the exact points where decay is expected to make its attack. Can we claim that there is no deformity wnen this mass of enamel is removed which was placed at this particular point to sustain the cutting edges—which are very likely to be already checked, and so often break away—and to furnish a triturating surface in occlusion with the points and anterior surfaces of the inferior incisors, as important as the grinding surfaces of the molars? When the natural relations and conditions are changed, it *is* a deformity, and the cutting away of the front teeth at these points is a deformity both seen and felt. The front teeth, as well as the bicuspids and molars, are formed to protect the gums. The gums will bear to be wounded, but will not bear an unnatural, continued pressure." Page 124, *Dental Cosmos*, Feb. 1872.

Now, I deny that the cutting away of the linguo-proximate surfaces of the incisor teeth in the manner I have described, produces a "deformity." The primary signification of the word deformity is, "Want of symmetry or beauty." Disfiguration means, "Injury of appearance, the result of disfiguring; deformity." As applied to the teeth these words must be taken as referring to their appearance to ordinary observers. It is obvious that no disfiguration or deformity results from this treatment.

I have no space to give any attention to other fallacies which appear in the extract given. I may say, briefly, that it is a novel view to consider any portions of the surfaces of the incisor teeth, "as important as the grinding surfaces of the molars" for triturating purposes. That the "front teeth, as well as the molars, are formed to protect the gums," is a statement somewhat difficult to understand. It is generally supposed that the teeth are intended for important uses, in the preparation of

the food for digestion. As to their protective power in relation to the gums, the latter seem to be very well able to take care of themselves, even after one or more or all the teeth have disappeared.

Dr. Jarvis finally rejects my system because it is unnecessary. He claims that if the same care of the teeth, which I advise, after the separations are made, when taken in time, it would entirely prevent the occurrence of decay. I am aware that this is the opinion of other members of the dental profession for whose views I have great respect. I am obliged, however, to declare that I have met with very little success in this way so far as the bicuspid and molar teeth are concerned. My practice is among the best classes of people in the community in which I am living. I have lost no opportunity of urging, in the very strongest manner, this kind of attention, but without such success as would justify any reliance upon it generally, as a substitute for such treatment as I have described. I shall be glad to learn how the prevention of decay in this way is managed. It will be very useful, if it is shown by what influence children or adults generally can be induced to take such care of their teeth as to prevent caries of their proximate surfaces, by their own efforts. The means I propose, while it does not remove the necessity of subsequent care, lessens the amount necessary, because, in a great degree, it renders the separated surfaces self-cleansing.

But Dr. J. does not himself rely upon this means of preventing caries, and offers what he claims to be a better plan than the one I have proposed and described of separating the teeth. This is the enlargement of what he call the second "V." I am ready to concede that there may be value in Dr. J.'s suggestion as applied to certain classes of teeth, and to teeth of a certain shape. But it would seem obvious that it is not applicable to the teeth of all persons, or to all classes of the teeth of any individual. It will not be admitted that the proximate surfaces of "the teeth are never in contact, except at a small point." Dr. J. himself states, in another part of his article, that there are teeth of a "flat or square type." In such teeth, probably more common than those which come in contact, at a limited rounded part of the surface, there are large surfaces of contact; or if the

whole of such surfaces are not in actual contact, they are in such close proximity that they afford secure places for the lodgment and retention of the secretions of the mouth. In the light of my present experience, I do not think the plan he proposes is applicable to such teeth as those to which I have referred, and while probably it might be usefully applied to a limited extent, it would fall far short of being a substitute for the method I propose, a method which I still claim may be employed for all classes of the teeth, with a small number of exceptions. Whatever value there may be in the plan of separation proposed by Dr. Jarvis, it requires closer consideration than has yet been given to it, and the test of practical application. I deny that the plan he proposes can be more easily practiced by the means heretofore relied upon. The new and beautiful appliances coming into use, certainly render this plan more feasible than it has been heretofore.

The second "V" of Dr. Jarvis is filled up during life by the gum, and caries rarely occurs except at its very apex, and frequently below the apex. The plan of treatment I propose, is to enlarge the first V of the molar and bicuspid teeth up to this apex. Enlarging it very little, or leaving it intact so that the line at this part touches. The projecting part of the dentine, for which Dr. J. inquires, is the apex of this wedge-shaped separation, which it is very obvious will prevent any other part of the surfaces from coming subsequently into contact. The line of contact is not sufficiently large for the retention of particles of food, although it will allow the easy passage of the silk or tape used for cleansing, and will effectually, if the testimony of many patients who have undergone precisely this kind of treatment is worth anything, prevent the forcing up of fibres of tough beef, or any other kind of food masticated by these teeth.

In reply to Dr. S.'s question as to "how certain are we when we determine 'that decay is inevitable,'" I refer him to the book he has noticed, from pages 114 to 126, for all the argument on the subject I can make, and which the *Dental Cosmos* could not, in justice to other contributers, afford me space to insert.

Dr. Jarvis has questioned the "wisdom of advocating with so much boldness, a practice receiving such doubtful results in practice." It certainly requires a very great degree of bold-

ness to venture upon such a statement as this, in the face of the fact that the whole system advocated, in the book referred to, is based upon "results in practice." On page 162 is the following:

"If the system of treatment I have been so earnestly advocating in the foregoing pages were hypothetical merely, it could not be expected, especially as it comes into direct conflict with settled prejudices, that it would be viewed otherwise than with great distrust, however plausible it might appear. But it must be observed that the theory is the result of long experience and extended observation. Although many years since my views tended in this direction, I did not adopt the method hastily, but with great caution, watching carefully the results. These have been of the most satisfactory character."

Every argument, indeed, of the book, from the opening to the close, is based upon facts which no intelligent dentist can pretend to dispute.

If it does not require courage, it certainly implies a remarkable amount of self-complacency to enable Dr. J. calmly to expect that the readers of the *Dental Cosmos*, in view of the reasons he has stated for his convictions, will agree with him that the "plan of artificial separation of the teeth proposed in this book is not necessary: is not the best treatment; is a failure."

I beg to say that I trust I am free from that pride of opinion which would lead me to contend for any views I might entertain in the face of the truth. I have never lost sight of one great object in practicing my profession, and that is to render the greatest possible service in my power to those who intrust themselves to my care. I have from time to time published my views, when they appeared to me likely to lead to improved treatment, in order to enable others to do what I found of advantage to my own patients. Actuated by this spirit, I am ready to abandon any opinions I may have formed, when they are shown to be incorrect. So far as the views stated in the book, which has led to this discussion, can be shown to be fallacious, I hold myself bound to abandon them. I am certainly unable to discover any reasons in Dr. S.'s article to induce me to change my present views.

I have just read, in the April number of the *Dental Cosmos*, a report of the discussion which took place in the First District

Dental Society of New York, after Dr. J.'s paper was read. While acknowledging the courtesy with which my views were treated, I must beg leave to say that, whatever other reasons than those stated the members of the society who opposed my views may have for withholding their approval of them, none were offered during the discussion requiring any reply.

I am reluctant to close this already long article without expressing my gratification at the many evidences which are reaching me, that leading men in our profession are carefully considering my recently published views of the treatment of dental caries. I am satisfied that, whether the system is adopted or not, it is leading to a careful scrutiny of the methods now relied upon for the treatment of dental caries. In a concluding sentence of a notice of the book, not by any means indorsing its views, one of the editors of the *Missouri Dental Journal* says that, "though we do not expect that the practice will be wholly adopted, we do think that it will exert a beneficial influence, and lead to more thought and investigation of the subject of which it principally treats." If the work in question accomplishes this much, or if it should lead to the adoption of the preventive treatment advised, during the process of shedding—and this has met with no opposition—I have reason to be satisfied with the influence the work is exerting, whether the system it advocates does or does not, as a whole, meet with approval.

Mechanical and Miscellaneous DEPARTMENT.

WHY DON'T YOU DRESS LIKE A DOCTOR?

I was conversing with a physician some time since, who related the following laughable anecdote:

"You are aware," said he, "that I am not very particular about my dress." Well, a few years ago a rather stylish young man entered my office as a medical student. He had only been with me a few days when a stranger called, and after

looking at me a moment, and then at my student, he addressed himself to the latter, saying 'Is this Dr. P.'s office?' "

"Yes, sir," was the reply.

"I want a tooth extracted," said he.

The student glanced at me, when a wink of the eye, and a motion of the hand, gave him to understand that *he* should go ahead and perform the operation. The young man had never seen a tooth extracted, but with some reluctance, and yet, with considerable assurance in his manners, he said, "Take this chair, sir."

The stranger did so, while the young Doctor seized a lower molar and commenced a stright forward pull. The stranger groaned, and the student continued his efforts for a few moments, when I said, "Tom., you had better rock that tooth a little, you will get it out easier."

Tom. instantly seized the forcep with both hands, and commenced the rocking process, which resulted in rocking the patient's head backward and forward in a most violent manner. But the tooth did not come, and the stranger seizing the young man's hand, he relinquished his hold.

I then stepped forward and said, "give me those forceps, Tom." "I guess that I can extract that tooth."

"Who in the d——l are you?" said the stranger.

"My name is Parr, sir."

"Why did'nt you tell me so when I came in?"

"Because, sir, you turned from me and addressed yourself to my student."

"Well, why in the d——l don't you *dress* like a Doctor?"

I. P. W.

JOURNALISTIC.

The *Cosmos* for May contains a reply by Dr. Arthur to Dr. Jarvis' strictures upon his book upon the Treatment and Prevention of Decay of the Teeth, also articles by Drs. Bogue, Hawks, and Driscoll, all upon the same subject, the sum of which would not differ very materially from the conclusions arrived at by ourself, and which were shadowed pretty plainly in our review of the work itself a few months since. The difference

between Dr. Arthur's work and many other recent publications seems to be that its reasonings are, at least, based upon observed facts, and although we are not inclined to view all of the author's conclusions as inevitable from the premises established, still it has nothing in common with those purely hypothetical productions which are by far too frequently found in our dental literature.

Proceedings of societies and associations occupy some sixteen pages next, in which we find a great deal of theory and opinions freely given, which, in many cases, are formed without observation or data, and are consequently worth just about what they cost, *i. e.* nothing. Men *will* theorize upon subjects which could be definitely determined by a little experimentation. When shall we learn to *work* out problems instead of attempting at all times to *reason* them out, or have we as a profession, so much more brains than muscle that the latter course is the more reasonable one? I apprehend that we need more work and perhaps then we could get along with much less talk, though I would not by any means be understood as arguing that we should in any degree relax our mental efforts.

In the report of the debates in the Brooklyn Dental Society, we notice it stated as if it were firmly established that the six year molars are usually the worst made, and *therefore* the weakest teeth in the mouth. The first proposition, which is pure assumption, allows the use of the word *therefore* and by this means the conclusion looks something like a creation of logical production.

Let us see for a moment what evidence we have that they are the worst made and the weakest in the mouth. We take up this subject here because this doctrine has been and now is somewhat prevalent. If evidence of this is required you are constantly pointed to the fact that the first molars are found decayed in a greater proportion of mouths than the second molars or bicuspids, and therefore *must* be weaker and of poorer structure than the others.

Suppose we examine the mouth of a patient fourteen years of age. We find the first and second molars and bicuspids all erupted, and perhaps the first molars the only ones decayed, but we must bear in mind, that these first molars have been in place

exposed to the agents which produce caries for about eight years, whilst the bicuspids and second molars have been exposed to such influences only about two or three years, and moreover the first five or six years of the eight, comprises the very time when the teeth are less cared for than at any subsequent period. It is not difficult to account for the greater prevalence of caries in these six year molars than in others without resorting to the hypothesis alluded to above. We do not propose to enter into the question as to whether the first molars should be preserved or not, because we do not think that there is any respectable proportion of the profession who advocate their extraction simply because they are first molars and therefore there is now no necessity for efforts in that direction.

The *Canada Journal of Dental Science* makes its appearance once more after an absence of several months, and presents a more inviting appearance than ever. We notice a method of capping pulps reported by G. V. N. Relyea, of Bellville, Canada. In congestion or inflammation of the pulp he recommends that we cautiously draw a little blood from it; treat a few minutes with carbolic acid, then cover the pulp with a piece of bibulous paper doubled four thicknesses and immediately cover with gold. He states that he does not lose one in fifty cases.

Thomas Fletcher, F. C. S., London, gives some information about amalgams. He states that silver 108 parts, and tin 118 parts, if carefully compounded, makes a good amalgam, but he adds that there should be only about 7 grains of mercury to 24 grains of the filings, and that with this amount of mercury it will weld on pressure into a mass as solid as coin, and if a little platinum is added to an amalgam it will harden with great rapidity. Perhaps this amalgam question has been too much neglected by our journals in the last few years, probably, because as a general thing, we wished to discourage the use of amalgams, but like the use of rubber, it cannot be ousted from its position by any neglect, nor indeed, by any exertion of those who would discourage its use. The whole question relating to its use has been much more frequently discussed years ago, and many persistent efforts made to drive it out of use but they have failed, and I am fearful that none of us will see the last of it. So if then, there are any questions in relation with it which needs elucida-

tion we may as well recognize them first as last. In the first place they are secret preparations or nostrums like the so-called patent medicines of the medical quacks, and if one is asked what materials he is using he is totally unable to answer. If we should venture to state that this was hardly creditable to a learned profession we might be taken to task by some dealer who is enriching himself by selling to the profession a compound which probably does not cost fifty cents per ounce for six or eight times that amount of money.

We have had some analyses of these compounds made recently, and in one of them was 5 per cent. of cobalt, which was perhaps due to the impurities of the metals used in its manufacture. Now cobalt is never found pure itself, but almost always more or less associated with arsenic so that it has been used for killing pulps. May not the fact that the pulps of teeth under amalgam plugs are more liable to die than under gold plugs, be accounted for in this manner? The analyst stated that the metals used in this amalgam are very impure, and still this brand was one of the most commonly used in this country.

Who will give us an amalgam with the metals and proportions composing it plainly stated, so that we may judge of its fitness and have some idea of its cost?

Harrison L. Napier, London, England, reports a case of fatal poisoning by a quack dentist who went to England from New York. He persisted for three days in attempting to kill a tooth by applying arsenic, and finally succeeded by killing the patient.

In the transactions of the Odontological Society of Great Britain, Mr. Coleman states that he had found by making examinations with a magnifier, that some amalgams contract in hardening so as to leave a space between the filling and the walls of the cavity.

Mr. Hutchinson exhibited a specimen of calcification of the pulp which was found in an upper molar of a girl about fifteen years of age. This girl had suffered severe continuous pain in the tooth, which was perfectly sound, but upon extraction the pulp was found almost completely calcified, and the pain at once ceased. No decayed tooth was found in the mouth and nothing

abnormal to appearance except that the teeth were somewhat crowded in the jaw.

In the *Medical Journal* of May 1st, under the head of "Graduation of Improper Persons," we find a resume of charges made by a Dr. Rodgers in relation to a New York Medical College, which he charges with having graduated a candidate who had been an advertising quack, and he also stated that the college in question had sold diplomas to different persons without their presenting any credentials or certificates, &c. The latter charge was finally retracted by Dr. Rodgers, but the other seems to have turned out true and is only mitigated by circumstances, but is not denied. We have noticed several times lately a disposition on the part of the members of the medical profession to inquire into this loose practice of granting diplomas not only to men engaged in disreputable transactions, but also to those who have never attended lectures and who have no claim upon a medical college which justly entitles them to the privilege of exacting a title from the school at great expense in the way of reputation to the institution which grants it.

The action of the Pennsylvania Legislature in promptly revoking the charters of the Philadelphia University of Medicine and Surgery, and the Eclectic College, is a precedent which will doubtless be followed, and it is to be hoped that these imposters who are parading their bogus diplomas will also be brought to justice. J.

BROKEN POINTED PLUGGERS.

Many efforts have been made to make uniform points for broken point pluggers and as noticed in the last *Dental Cosmos*, S. S. White had an experienced man experimenting and promises a success.

I have succeeded in accomplishing the desired end, and give my method. After having shaped the point before tempering, take a serrating file and make a fine notch where you desire the point broken, then harden, and they can be broken at the desired point every time.

EDWARD HALE, JR.

SOUTH CAROLINA STATE DENTAL ASSOCIATION.

The "South Carolina State Dental Association" will hold its next annual meeting at Columbia, S. C., commencing on Tuesday, July 23d, 1872.

THOMAS T. MOORE, Cor. Sec. pro tem.

IOWA STATE DENTAL SOCIETY.

OFFICE OF COR. SEC., IOWA CITY, IOWA, Jnne 1st, 1872.

This, the tenth annual session of the Iowa State Dental Society, which takes place at Des Moines, Tuesday, July 9th, 1872, promises to be one of the most interesting meetings the Society has ever held, and it is earnestly requested that every member will feel it to be a personal duty to be present, and lend his influence and knowledge to the good work of advancing dental science.

Dentists of other States, as well as members of the profession in this State who do not as yet belong to our Society, are most cordially invited to be present and participate in the discussions.

Now that the Rubber Company has succeeded in obtaining another term of years for their patent, the subject of "New Bases" will doubtless receive considerable attention at this session.

Those who come over the Iowa Central Railroad will be returned at one-fifth regular fare. All other roads having refused to make any deduction whatever.

Arrangements have been made with the proprietor of the Savery House—the best hotel in Des Moins—to accommodate those in attendance at $2.00 a day. The Committee on Examination request all who expect to join the Society to meet them at the Savery House at 2 o'clock Tuesday, July 9th, the first regular session of the Society being at 7 o'clock P. M. of the same day.

ESSAYS AND SUBJECTS.

E. I. Woodbury, Conditions requisite to Professional Success; R. S. Rathbun, Theory vs. Practice; J. Hardman, Dental Diagnosis and Extraction; J. F. Sanborn, Trigemini; G. P. Mann,

Treatment of Dental Caries; W. O. Kulp, Successful Dentistry; E. C. Chase, Dental Chemistry; E. T. Rigby, First Dentition; L. C. Ingersoll, Nature's Method in the Removal of the Deciduous Teeth; P. T. Smith, Treatment of Exposed Dental Pulps; G. S. Shattuck, Alveolar Abscess; I. P. Wilson, How a Dentist should treat his Patients; N. H. Tulloss, Nitrous Oxide as an Anæsthetic; H. W. Ray, The Chemical Constituents of the Atmosphere and its Physiological Influence; H. H. Ray, Alveolar Abscess. The above subjects, and any others that may be suggested, will be thoroughly discussed.

THE INDIANA STATE DENTAL ASSOCIATION.

The fourteenth annual meeting of the Indiana State Dental Association will be held in the lecture room of the Indiana Medical College in the city of Indianapolis, commencing on Tuesday, June 25th, 1872, at 2 o'clock P. M.

The profession generally is cordially invited, and the two hundred dentists of Indiana are especially urged to turn out in force.

SUBJECTS FOR DISCUSSION.

1st. The Essential Principles in Filling Teeth.

2d. Dr. Arthur's System of Prevention and Treatment of Decay of the Teeth.

3d. Dietary Influences upon the Formation of the Teeth.

4th. Dental Medicines; new remedies.

5th. Dental Irregularities; best æt. for treatment.

6th. In what cases should dental pulp be destroyed.

7th. The various preparations of gold for filling.

8th. Broken points for pluggers.

9th. Base for artificial teeth, best substitute for rubber.

JOHN F. JOANSON, Indianapolis,
WM. L. ANDREWS, Kendallville,
E. V. BURT, Lafayette,

Indianapolis, June 1, 1872. *Executive Committee.*

AMERICAN DENTAL ASSOCIATION.

The American Dental Association will commence its twelfth annual session at Niagara Falls Tuesday, the 6th day of August, at 10 A. M.

The officers of the Association constitute the committee for securing reduced rates of fare. They are G. H. Cushing, Chicago; C. E. Francis, New York; J. R. Walker, New Orleans; J. A. Salman, Boston; M. S Dean, Chicago; W. H. Goddard, Louisville; A. B. Robbins, Meadville, Pa.; G. B. McDonnell, Pa., and S. B. Palmer, Syracuse, N. Y.; W. W. Allport, Chicago; Isaiah Forbes, St. Louis; A. E. Bogue, N. Y.; J. S. Knapp, New Orleans; J. Taft, Cincinnati.

Homer Judd, J. Taft, W. H. Atkinson, S. D. Shephard, and Wm. Dutch were appointed a special committee on local societies and for conference with the profession.

The standing committees are as follows:

DENTAL PHYSIOLOGY.—J. H. M Quillen, M. S. Dean, and C. F. Wheeler.

PATHOLOGY, &c.—Homer Judd, W. H. Atkinson, and C. Stoddard Smith.

HISTOLOGY AND MICROSCOPY.—R. W. Varney, J. Taft, and W. W. Allport.

CHEMISTRY.—D. S. Dickerman, H. A. Smith, and J. J. Birge.

THERAPEUTICS.—H. L. Sage, J. R. Walker, and W. N. Morrison.

OP. DENTISTRY.—C. E. Francis, E. A. Bogue, and Wm. Dutch.

MECHANICAL DENTISTRY.—J. A. Salmon, F. Hickman, and J. H. Smith.

EDUCATION.—A. B. Robbins, C. C. Chittenden, and J. N. Crouse.

PRIZE ESSAYS.—George A. Mills, E. Floyd, and Robert Heny.

DENTAL ÆTIOLOGY.—W. H. Bronson, L. D. Shepherd, and G. R. Thomas.

G. B. McDonnell, of the Committee of Arrangements, has made arrangements with the International Hotel, the Cataract, and Spencer House, for a reduction of the price of board fifty cents per day for dentists; also a reduction in several items of expense at that place. To secure rooms at hotels at these rates,

the applicant must give notice to the proprietors before the 1st of August.

The transactions for the year 1871 will not be published before the coming session.

M. S. DEAN, *Secretary.*

ANOTHER NEW BASE.

Dr. J. Ormsby Donogh sends us a plate of what he calls Volney Smith's Coralline Base, and claims that it is well calculated to supersede the use of rubber as a base plate for artificial teeth. The plate looks something like the "Rose Pearl," and is marked the same way as Celluloid. It makes a good looking plate, *seems* to be strong, and we are in hopes that it will answer the purpose. We shall keep an eye upon it, and if it is valuable we shall not be slow to inform our readers of the fact. We are inclined to think that pyroxyline enters into its composition, but we are unable to detect the smell of camphor about it. That pyroxyline has many of the qualities which are essential in a base, we cannot deny, and we have not yet despaired of seeing all of the objective features overcome, and this may be the form in which it will be successful. Dr. Donogh states that he has signally failed with the Celluloid. Wait and see.

J.

POLISHING PLUGGERS.

BY H. A. B.

To polish the points of serrated pluggers, take a piece of pumice stone, and trim it to the size and shape of a large bottle cork; make a hole in the center of one end; fasten it on the end of your lathe mandrel with melted rosin; take a rubber file and turn the surface smooth, then hold the point of the plugger on the pumice stone while the lathe has a fast motion. In this way the point of any plugger can be polished nicely in one or two minutes. If any one has a better way I would be pleased to hear from him.

CHICAGO, April 15, 1872.

Missouri Dental Journal:

At the annual meeting of the Chicago Dental Society, held April 1, 1872, the following officers were elected.

Dr. J. N. Crouse, President; Dr. M. S. Dean, First Vice President; Dr. A. W. Freeman, Second Vice President; Dr. E. D. Swain, Recording Secretary; Dr. M. W. Sherwood, Corresponding Secretary; Dr. C. R. E. Koch, Treasurer; Dr. J. B. Bell, Librarian; Drs. Cushing, Sherwood and Dean, Executive Committee.

ERRATA.

In Dr. Chase's article on "The Causes of the Deposition of Salivary Calculus," there is an error. The word *sodium* should be substituted for *iodine*, on page 189, second line from the top.

ANSWER TO QUERIES.

Second. The cause of the pits in the surface of rubber plates made from star rubber is the super abundance of earthy substance it contains, and the too rapid raising the heat from starting until it reaches 320°. It should take at least eighty minutes to reach that point.

Third. "How can the objections to black rubber plates, on account of color, be overcome?" "Can the Ethiopian change his skin?"

Fourth. The different colors of celluloid base. Which is the best? I answer, it is Hobson's choice, and miserable at that.

Fifth. Folsam Flexable Edge is not durable, and of no practical value.

Yours, E. H. M.

THE HEALTHIEST OF CITIES.

"The healthfulness of St. Louis challenges the attention of the world. No city gives to its residents a better guaranty of immunity from disease, or a fairer promise of long life. Our health report for 1870, showing St. Louis at the head of the

leading cities of the country in this respect, excited very great interest, and has occasioned the report of 1871 to be looked for with special curiosity. We have already published extracts from this forthcoming report, presenting the striking statement that the per centage of mortality has been only 1.67, or sixteen and a fraction to a thousand of the population. In 1870 the the deaths per thousand were 21.3. The present exhibit implies a degree of healthfulness which has scarcely a parallel in the history of any great city. This fact will strikingly appear in connection with the following schedule of the per centage of mortality in this city for each of the past twelve years:

Year.	Per centage of mortality.	Year.	Per centage of mortality.
1871	1.67	1865	3.08
1870	2.12	1864	4.08
1869	2.06	1863	3.63
1868	2.07	1862	3.16
1867	3.02	1861	3.30
1866	4.63	1860	3.86

It will be observed that a remarkable falling off in the amount of mortality began in 1867, and has since continued. The lowest per centage prior to that year was 3.08. The average per annum for the seven years before 1867 was 3.67. The annual average since has been 2.18. The difference is remarkable.

The deaths per thousand of the population in the eight leading cities of the country, in 1870 were as follows:

	Deaths to Population.		Deaths to Population.
St. Louis	21.3	Philadelphia	25.5
San Francisco	22.3	Baltimore	27.1
Boston	24.0	New York	29.3
Chicago	24.5	New Orleans	37.6

The healthiest of the great European cities is said to be London, where the death rate is 25 to 1,000. About the wholesomest country in Europe is England, showing, in the aggregate of rural districts and cities, fifteen deaths per thousand of the population. It thus appears that St. Louis city life is nearly as healthy as average life in Merrie England.—*Mo. Democrat.*

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The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] JULY, 1872. [No. 7.

[*From the St. Louis Medical and Surgical Journal.*]

AFFECTIONS OF THE EYE FROM NEURALGIA OF THE FIFTH PAIR OF NERVES, CAUSED BY DISEASE OF THE DENTAL ORGANS.

BY H. Z. GILL, M. D.

[Read before the Missouri State Medical Association. Session 1872.]

The neuralgiæ, especially when accompanied with disturbance of vision—amblyopia and amaurosis—have been regarded as of a nature so obscure, so perplexing as to cause, so difficult and unsatisfactory in treatment, that any information on the subject which would facilitate the comprehending and cure of a certain proportion of the cases, would probably be acceptable and profitable to the general practitioner as well as to specialists.

As neuralgia of the fifth pair of nerves is generally first in the list of results, and the affections of the eye second or consequent upon the first, we shall not hesitate to take some latitude in speaking of each as resulting, in some cases primarily, and in others in a more indirect manner, from *diseases of the dental organs*

The intimate anatomical and physiological relations between the three branches of the trigeminus and the third and sympathetic, through the medium of the ophthalmic (lenticular or ciliary) ganglion, are recognized by all; but the relation of these nerves with the optic is not well understood.

In a recent work on "Neuralgia and the Diseases that resemble it," by Francis E. Anstie, M. D., of London, the author takes the ground, and supports it by a mass of evidence, that the

essential seat of every true neuralgia is "the posterior root of the spinal nerve in which the pain is felt."* In a more recent article from the pen of Dr. A. Nothnagel,† on "Pain and the Disturbance in the Cutaneous Sensibility in Neuralgia," after examining the question of origin in the *terminal apparatus*, in the *terminal branches*, and in the *trunks* of nerves, he comes finally to the conclusion that "all the symptoms may be explained (without forcing them, and on the other hand they arguing with very great probability in the same direction) by seeking the *changes* in the *central ganglion cells*, which changes occasion the hyperæsthesia (hyperalgia) and anæsthesia of the skin."

While he excludes several classes of cases from his examination, yet he includes in the investigation neuralgia of the intercostal nerves in *ulcus ventriculi*. The nature of those changes is not very clearly made out. Anstie‡ thinks they are of a nutritive character: "the essential condition of the tissue of that (posterior) nerve-root is atrophy, which is usually non-inflammatory in origin." Nothnagel says, "That they are not of a coarse, anatomical nature is plain." "We have rather to do with functional disturbance, of which molecular alterations may be at the bottom, but which withdraw themselves from demonstration." Bernstein, in a late work on investigations on irritation in the muscular and nervous systems, arrives at the conclusion that the wave of stimulus or irritation in the nerve fiber is projected without it losing vital power, that the nerve fiber simply conducts the irritation without thereby performing any labor. And he, moreover, made the view very probable that the strength of the sensation was in direct proportion to the number of irritated elements in the nervous center.

The recognized site of pain may not correspond to the branch irritated, in cases dependent upon irritation of the terminal branches, but may be deflected, either from the central origin, or through an intermediate ganglion, and thus the hyperalgia or the anæsthesia may be extended indirectly to a part, or to an extensive surface.

*Anstie on Neuralgia, page 110.
†Virchow's Archiv., vol. 54, part 1-2, p. 121
‡Anstie, l. c., page 110.

Anstie* has shown that, in facial neuralgia, at least, there is some effusion—transudation or thickening of the tissues corresponding to the painful nerve, slight though it may be, and this may account in part for the anæsthesia. From the material at hand of the class of which he speaks—about seventy cases—Nothnagel† was forced to the conclusion that in the first two to eight (2–8) weeks there is present an increased sensibility of the skin; then, in the further continuance of the disease, the anæsthesia was developed. In this conclusion the intensity of the spontaneous pain is of importance; the greater it is the earlier the anæsthesia is developed. There are exceptions to this; and the converse even may be met with. The rule, however, is: "*recent* neuralgia, cutaneous hyperalgia; *old*, anæsthesia."

From various facts the postulate follows, that in the transmission from one ganglion cell to the next, the process of irritation (stimulation) experiences a certain obstruction and therefore loses in intensity; that is, it will be less intense in cell *b* than in cell *a*, less than in cell *c* than in cell *b*, and in cell *u*—1 it is no longer found. "If, now, at a time when the ganglion cells are perfectly conducting—not yet wearied—severe and continued irritation from the periphery occurs, it is quite possible that a condition may be engendered by which the limit (range) of recognition, even for higher irritation, is not reached at *a*, but only at *n*—1 or at *n*—2. The effect would consist in an increase of the intensity of sensation, that is in hyperalgia (hyperalgesia) because there is now an increased number of irritated elements." "This is, we know," says Nothnagel, "and can only be a hypothesis. Yet there are, just in the field of pathology of the nerves, many processes which will never be accessible to a direct experimental or anatomical examination; and the above-intimated hypothesis corresponds with most of the pathological facts, at least according to my view."

Dr. Garretson, of Philadelphia, has quoted numerous cases of nervous and inflammatory affections arising from diseases of the teeth. one of *hemiplegia* in the practice of M. Toulmin, mentioned by Sir Astley Cooper. The tooth was unusually painful. It was extracted, and the paralytic affection in a short time sub-

*Anstie l. c., p. 143.
†Virchow's Archiv., l. c.

sided. A *second case*, of "*Epilepsy* from *diseased teeth*," published by Dr. Rush; also one from J. S. Ramskill.

A *third* from J. L. Levison: "Paralysis from dental irritation;" *Am. Journal Dental Science*, vol. I, p. 504.

A *fourth*, "Catalepsy from toothache," from the *Dental Record*, vol. VIII, No. I, p. 197.

A *fifth* chorea from *dental irritation*.

A *sixth*, from Marshall Hall, of "A partial Amaurosis, arising *apparently* from the caries of an upper canine tooth."

These cases have been cited, not with the expectation of announcing something new: the dates and the names show that the subject is one long since considered, at least by some of the profession; but we have mentioned them to attract the attention of the general practitioner to the fact that other affections besides facial neuralgia may arise from irritation about the dental organs; especially, however, do we mention the cases of *facial neuralgia*, with its ophthalmic complications, because of the great attention it is deservedly receiving at the hands of the dental profession. We are under obligations to such men as Salter, of Guy's Hospital, London; Garretson, of Philadelphia; Judd, of St. Louis, (these are not mentioned because others are unworthy,) for the prominent manner in which they have presented the subject to the medical profession. We present the subject for another reason, namely, to invite the attention of the general practitioner to a question which has been sadly neglected, I mean *the condition of the dental organs in neuralgic affections of the fifth pair of nerves.*

There are many people who give little or no attention to the condition of their teeth, especially persons living in the country, at a distance from a dentist. They may suffer for years with neuralgia, and neither they nor the physicians suppose that dental irritation has anything to do with the case, when the fact is, that has all to do with it. Anstie* says: "Last among the peripheral influences of sufficient importance to be specially mentioned as *effective factors* in the production of neuralgia, must be mentioned caries of the teeth, and the comparatively rare accident of the malposition or abnormal growth of a wisdom tooth."

*Anstie, l. c., p. 134.

M. Notta, in an analysis of one hundred and twenty-eight cases of trigeminal neuralgia, attempted a classification of the complications. We find respecting the special senses, that "the retina was completely or almost completely paralysed in *ten cases*, and in *nine others* vision was interfered with; partly, probably, from impaired function of the retina, but partly, also, from dilatation of the pupil or other functional derangement in-independent of the optic nerve."* Thus nearly one-sixth of the whole number of cases were affected in the vision. Anstie adds to this: "Other complications must be added to the list, all of which have been witnessed and several of them in a large number of instances: iritis, *glaucoma*, corneal clouding, and even ulceration;" and on page 102 he says, "Glaucoma is a still more serious disease of the eye [some years ago he had excepted glaucoma] which I think there is now sufficient evidence to show is sometimes entirely, and very often in considerable part, neuralgic in origin." Farther he says: "Since my attention was directed some six years ago, to the frequent connection between the so-called rheumatic iritis and neuralgia, I have taken much interest in the subject of acute eye affection"—"I have now seen two cases [glaucoma] in which, if I possess any faculty of clinical observation whatever, the whole genesis of the disease was in a neuralgic disorder of the trigeminus; and it was to me a melancholy reflection that nothing better than iridectotomy in one case and excision of the eye-ball in the other, could be done in the present state of ophthalmic science."

Of the paralytic secondary affections, we have in the one hundred cases mentioned by Anstie, twelve connected with neuralgia of the trigeminus, "and in most of these it was one or more of the muscles connected with the eye that were affected. * * * * * * Impairments of sensation, both common and special, are very frequent attendants of neuralgia." "As regards *vision*, besides minor perversions and disturbances, I have observed more or less complete amaurosis in several instances of ophthalmic neuralgia; in one case it was absolute, and lasted, with but slight improvement in the intervals between the paroxysms, for nearly one month, but disappeared entirely, though somewhat gradually, after the final cessation of the neuralgia." We are

*Anstie, l. c., p. 92.

somewhat surprised to see Wells, in his valuable work on diseases of the eye, pass this subject over so lightly as he does.

We will now give some typical cases by way of illustration, from our own practice and others:

Mr. F. S., of Ills., aged 33; Irishman by birth; farmer by occupation. Patient was sent to me by a medical friend, Feb. 12, 1872. The history of the case as he gave it, is as follows: In the early part of the winter of 1870–'71, he was attacked with neuralgia of the head and face. It was very severe at times, and continued so till the middle of the summer following. The neuralgia affected both sides of his head, and his vision to such an extent that he could not read. After the pain left him, in the middle of summer, his sight improved. In December, 1871, he was again attacked with neuralgia of the head and dimness of vision. Before he came to me he had been under treatment for the neuralgia, but I believe nothing had been done to relieve the amblyopia. He could scarcely see well enough to go on the street with safety; could make out No. 16 of Jaeger's test-types. He had been able to sleep but little for several weeks on account of the severe neuralgia. Ophthalmoscopic examination of the eye showed retinal effusion; the retinal artery was very indistinct. The painful points of Valleix (points de douleureux) were well marked, more especially on the left side of the head. The patient having lived in a region of country where ague at times prevails, I was prepared to learn that his treatment had been largely antiperiodic. I now sought for some definite source of irritation, inquiring first concerning his teeth, to which his answer was that he had no toothache, that his teeth were good. I then examined them by inspection, and by percussion with the handle of the forceps, yet elicited nothing, except that the teeth were not at all painful; but there was decay in some of them at the margin of the gum. Having myself suffered from sensitive dentine, I determined to examine more carefully and minutely in decayed spots. When he came again, in a day or two afterwards, I made an examination of each tooth, and was rewarded by finding what appeared to be exposed necrosis of the alveolar process of the superior maxillary bone of the left side, but which proved to be a deposit of tartar, as large as the little finger-nail, attached to the fangs of

first and second molar teeth, the gum being intact around the necks of the teeth. I again percussed these teeth with considerable force before the patient acknowledged any soreness connected with them. I advised him to have them removed immediately, believing them to be the source of the neuralgia, and this latter the cause of the amblyopia.

After two or three days consideration he consented, and on the 16th I extracted, at the first sitting, the first and second molars and the second bicuspid. On examination of the teeth I found extensive ulceration around the fangs of the molars, extending in some degree to the second bicuspid. Believing the dens sapientia not to be implicated, it was not extracted. Three or four days later I extracted the first bicuspid, believing that it was somewhat involved. Improvement of the neuralgia and amblyopia commenced at once. On the 21st he read No. 14 of Jaeger, and on the 24th he read No. 6. His general condition steadily improved.

March 4.—Reads No. 2 with some difficulty. Went home March 8th and returned March 13th. Has had pain in his head only a part of one day, he thinks from riding in the wind; reads No. 2 with considerable ease. Sleeps well. Called twice afterwards, and went home on the 21st of March. After the extraction of the teeth, he called to mind the fact that about eight years since he had received a blow on his jaw while breaking a colt. The face was swollen for a few days and quite painful, but all uneasiness soon disappeared; and he had entirely forgotten the circumstance until reminded of it by the extraction of the teeth.

In one part of the "field of vision" there was greater defect than in the remainder; and evidently from the appearance of the fundus there was, early in the case while under my care, retinal effusion. The specimens of teeth are preserved. The rapid improvement must be ascribed almost entirely to the extraction of the teeth, thus removing the source of irritation.

CASES FROM LAWRENCE.

"*Amaurosis caused by a Carious Tooth.*—F. P., thirty years of age, possessing a good constitution and enjoying good health, with the exception of pain in the head and limbs which never

lasted long, suddenly experienced in the autumn of 1825, a violent pain shooting from the left temple to the eye and the side of the face: he ascribed it to cold. This pain lasted several days, then lessened, and reappeared from time to time without being sufficiently severe to induce the patient to seek medical aid. In about two months it suddenly increased in intensity, occupying the eye, particularly, with a feeling as if it would pass out of the orbit. F. P. now discovered that he was blind with that eye, and applied to a neighboring physician, whose treatment, continued for two months, did no good. The pain, however, was no longer continual, it assumed a somewhat periodic character, leaving the patient easy for some hours in the day. At the end of the following six months, the pain increased, the cheek swelled, some spoonfuls of bloody matter discharged by a spontaneous opening in the lower eye-lid, after which the swelling subsided and the pains nearly disappeared, although the blindness remained complete. The discharge was renewed from time to time during the following six months, and there was no great suffering. But in the autumn and winter (1826) the pain, particularly in the eye became so violent, that F. P. came to Wilna in the beginning of 1827, determined to have the organ extirpated if no other remedy could be found. Prof. Galenzowski found the left eye totally insensible to light, with the pupil dilated, and no other visible alteration. The pain not then so severe, consisted in violent pricking or darting sensations in the left temple, and darts around the eye There was discharge from the lower eye lid. The first molar tooth of the left side was carious; it had not caused much uneasiness; and the tooth-ache when it existed, had *not coincided* with the pains in the temple and eye. [The italics are ours.] The professor determined on removing this tooth, and having done so, was surprised to find a foreign body at the extremity of the fang. When drawn out it proved to be a small splinter of wood about three lines in length, which had traversed the center of the tooth. A probe passed from the socket into the antrum, from which a few drops of thin fluid escaped.

The pain ceased almost entirely, and, on the same evening the eye began to be sensible to light. Vision gradually improved, so that on the ninth day the patient could see as well with the

left eye as with the right, after a blindness of thirteen months; on the eleventh day he left Wilna to return to his family."—(*Arch. Generales de Medecine,* t. xxiii, p. 261–264.

(To be continued.)

ABRIDGED REPORT OF THE TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY.*

This society met for its eighth annual session at Chicago, May 14, 1872, Dr. Willson, of Aurora, presiding, and over seventy-five of the active members being in attendance.

The President, Dr. Willson, delivered the annual address, which was listened to with marked attention, and was full of very interesting statistics.

The first subject for discussion was opened by the reading of a paper by Dr. E. D. Swain, of Chicago, on "Mechanical Dentistry." The essay showed the necessity of a knowledge of chemistry, physiology, and anatomy to the mechanical dentist. It deplored the fact that this branch is being discarded by the leading men of the profession, and with it the only truly surgical part of dentistry is also cut off. The same hands that restore defects in the natural organs should give their attention to at least the arrangement and selection of the artificial ones, as they alone can imitate nature, knowing the requirements of the case before them; the purely mechanical execution may be left to other hands. There is more opportunity for the exercise of artistic skill in the use of single gum and plain teeth than in the use of blocks. Among the legitimate means at the disposal of the artist for the imitation of nature were enumerated: a certain degree of irregularity, such as overlapping laterals, etc., gold fillings, worn crowns, necks shaved to represent wasted alveolus, etc. Generally recommends zinc dies—sometimes uses a babbit metal one to finish up on. Clasps have been a failure mainly on account of their improper adjustment. It is essential to get a perfect impression of the tooth to be clasped. This can best be obtained by fitting a cap of sheet lead or tin over the tooth, splitting this on two sides and filling with plaster

*A complete report is published by the Society in pamphlet form. *Price*, 50c., which can be had by addressing, post paid, C. R. E. Koch, Secretary, 645 Wabash Avenue, Chicago.

of paris. If necessary, in removing, the plaster can be broken with the slit in the cap, the cap bent apart and after removal brought together again. After the clasp and plate are shaped, their relative position can best be secured by placing them in the mouth, and with a spatula laying plaster upon the joint, and allowing this to set before removal; does not prefer clasps, but believes there are cases when nothing else will answer.

Dr. Kilbourne, of Aurora, believes clasps admissible—has worn a clasp plate himself since '52 without injury.

Dr. G. O. Howard, of Galena, asked Dr. Swain if he had ever made clasps by winding platina wire around a plaster tooth, and flowing gold on this.

Dr. Swain replied he had not, but thought it a good way.

Dr. Crouse, Chicago, was glad the Rubber Company had again gained their case, as it will make some men abstain from the use of it, and they would serve their patrons much better.

Dr. Edwards, of Peoria, said he would be a much better mechanical dentist had he never seen rubber; does not think clasps admissible as patients will not observe proper cleanliness.

Dr. Sherwood, Chicago, believes that the manufacture of teeth in blocks is a great advance toward perfection. Atmospheric pressure plates can be made in all cases. Clasps are never admissible. Rubber is better adapted as a base for artificial teeth than any other substance; protests against its being called a curse. It is better than the gold.

Dr. Honsinger, of Chicago.—Rubber is superior as it does not contract like all metallic substances. In swedged plates there is the contraction in dies, and hence there can not be such a close adaption to the mouth; has never seen but one case of injury from rubber, and in that case the rubber had been imperfectly vulcanized; prefers gold for partial plates. Clasps may be safely used; makes his of gold with one-twelfth of platina; advises frequent cleansing.

Dr. Sturgiss, of Quincy, uses that which is best in the case before him. Clasps will do some harm, but so will rolling suction plates.

Dr. Swain, has had some hopes of aluminum, but has had some plates returned to him with holes eaten through them; has re-

melted and refined the plate bought at the depots and rolled himself, and obviated this difficulty; has made plates of this substance combined with Ingersoll's Am. Platinum, this makes nice work and is free from galvanic action. Two years ago had a case of salivation from rubber plate; remedied by leaving out rubber and substituting metallic plate.

Dr. Kilbourne's experience with aluminum was like Dr. Swain's, holes eaten through plate; hopes this may be overcome; continuous gum work is the best, and next to it, gold with rubber attachments.

Dr. Rising, of Rockford.—Rubber ought not to be condemned because the idyosyncrasies of some persons may be opposed to it; where there is one who cannot use rubber there are five hundred who can, thought celluloid bids fair to supercede it; has never had patients complain of taste of camphor in this.

President Willson's experience was the same as Dr. Swain's with aluminum; plates returned full of little holes.

Dr. Dean, of Pekin.—Experience with aluminum the same; has abandoned its use.

Dr. Edwards, of Peoria, asked if the aluminum spoken of was cast or swedged.

Dr. Dean.—Mine were cast.

Drs. Swain and Killbourne.—Mine were swedged.

Dr. K. B. Davis, of Petersburg, thought rubber a curse because it encourages men to style themselves dentists who are incapable to save the natural teeth.

The subject was then closed. The whole forenoon of next day was set apart for clinics which were held at S. S. White's Dental Depot.

In the afternoon of the second day after the transaction of some miscellaneous business Dr. G. O. Howard, of Galena, read an Essay on "Dental Quacks." The paper defined the term and illustrated several varieties of the species, and finally said that even college graduates are not entirely free from being amenable to charges of quackery, and quoted several lengthy newspaper advertisements, as a basis for this assertion. As a remedy he recommended the education of the public upon this subject, and commended the publication of the *Dental Mirror* by the St. Louis Dental Society as a good move in that direction.

Dr. Sherwood, of Chicago, hates quacks; has spared no time nor patience to educate his patients against them, and shall never cease to do so.

Dr. Kitchen, of Galva, said that men sometimes style themselves D. D. S. who are really not graduates.

Dr. M. S. Dean, of Chicago, then read an Essay on "Sound Practice, Sound Philosophy," of which the following are brief extracts:

"Our practice to be successful, must be based on sound philosophy, that is, upon the knowledge of those principles and laws that govern the materials or agents *with* which we operate, and also those *upon* which we operate. * * * In the filling of very frangible teeth when there is danger to be apprehended—as checking the enamel, or splitting the bicuspids—it was more philosophical to use the heavy leaden mallet, than light steel or wooden ones, as the latter, has greater *vis viva* in proportion to their momentum. When the tooth is very brittle, cuniform pluggers should not be used as the tapering points acted as wedges and might either check the enamel or split the tooth. The same result might be effected by driving the gold too forcibly into cavities that diminished from their orifices. This evil may result from the use of the heavy lead mallet, but the light mallet would be more capable of producing this result. It is not sound practice to draw the gold over the margins of a cavity with mallet or burnisher. * * * In filling a large crown cavity with surrounding walls unbroken, the central portion should be kept higher than the peripheral, especially as the work approaches completion. * * * Gold should not be forced *unwillingly* into any portion of a filling where cohesion is important, nor against the walls of a cavity. The pellet and plug must unite by "first intention" and before the gold has been rolled from place to place and thus become partially condensed or knotted, large pellets should be packed with correspondingly large points and afterwards *condensed* with sharper ones * *

* It is sufficient if the walls of the cavity are absolutely protected and the gold sufficiently consolidated to resist the force of mastication. It is more philosophical not to compact very *large cavities* perfectly. In *some respects* a porous filling is better than a perfectly dense one. All gold fillings are porous to some

extent, and there is little danger of getting them too compact. * * * It cannot be possible to pack gold more accurately against *concave* walls with instruments having a smooth, *flat* surface, than with a a serrated *convex* one. If the surface of the filling could be kept flat, no points could be better adapted to the purpose of making dense fillings, but this can rarely be done, and when it is not, no points are better adapted to shingle or bridge over the interstices and deceive the operator. It has recently been asserted by a writer who uses the "steel mallet and smooth points" that with these, operations are performed, giving no pain to the patient, and with no risk of fracturing the enamel, and that the fillings are harder and better adapted to the margins of the cavity. Whether this magic power resides mostly in the steel mallet or the smooth points, or whether they are equally efficacious in producing these *desirable* results, and in averting the contrary ones, the writer has neglected to state. Most dentists place a layer, or cushion as it were, of gold between the instrument and the enamel. If this is done these points would as readily fracture the enamel as if they were finely serrated. If this inference is correct we are forced to conclude that this charm belongs to the peculiar properties of the steel of which this wonderful mallet is made, and we are warranted in this conclusion by the assurance of the writer that it is *non vibrating*. * * * By beating the gold under a smooth pointed plugger, it is drawn snugly and perfectly against the walls and margins of the cavity, on the same principle as a cubic slug is made to adjust itself to the side of a gun barrel when vigorously rammed down with a steel ramrod. If the enamel were made of steel this would be sound practice, provided our patients were made of steel also. * * *

Success in the treatment of alveolar abscess depends in a good measure upon sound philosophy. One or two thorough applications of creosote or carbolic acid are usually sufficient. The continued and daily applications afterwards often produce the trouble instead of relieving it. * * Those having a fistulous opening are easily treated and quickly cured, as the irritating particles may be washed out by injections. Hence great care should be exercised, when there is no opening, to remove patiently and thoroughly all extraneous matter from the canals of roots before therapeutic remedies are applied. * * *

The universal practice of restoring the contour of the teeth is not sound practice, in many cases it was important to mastication and the articulation of the voice, and also to the beauty of these organs, but the practice was becoming too universal. Many cases were instanced where they must fail, and when fillings having an inclining surface so that the force of mastication would be in a direction to retain them, is more philosophical.

Prof. Judd, of St. Louis, could find but little to disagree upon; he has used the common wood, the light and heavy lead, and the soft rubber mallet, but now uses the steel mallet exclusively, as his patients prefer this. Experience rather than philosophy should guide us. Philosophies are not of much account when they do not accord with experience. The mallet that gives the least *vis viva* with the least momentum will give the least pain.

Dr. Crouse can not understand how the steel mallet can be preferred in St. Louis when his own patients prefer the leaden; was glad the essayist called attention to the danger of cracking the enamel; this is increased by a quick sharp blow of a light mallet; calls attention to trimming down the gold even with the edges; soft foil adapts itself better to the walls and edges than cohesive, and he always likes to use a layer of soft foil next to the walls and edges; this is a greater consideration than whether pluggers be of smooth or serrated points; favors serrations even deeper than Varney's. In the treatment of diseased teeth we are not careful enough; there is no good derived from frequent repetitions of treatment, thoroughness at the first time is the greatest essential; often spends half a day in getting the creosote through the roots of a tooth.

Dr. Morrison, of St. Louis, was among the first to use the steel mallet; had used lead before; desired to know the difference of weight between the steel and leaden mallets, as used by Dr. Crouse.

Dr. Crouse should think them of about the same weight.

Dr. G. V. Black, of Jacksonville, believes there is as much difference in the handling of the mallet as in the mallet itself. The assistant's hand becomes accustomed to a particular instrument. Smooth points are preferable in some localities, and serrations in others; dislikes to hear teeth spoken of as dead teeth in which only the pulp is dead.

Dr. De Crow, of Quincy, in the absence of his regular assistant who uses a leaden mallet, calls in his wife who formerly assisted him with a wooden mallet, and always has her use this, as it is easiest to the patient in her hands.

Dr. Sherwood.--Commenced use of mallet with Atkinson's pluggers, a hard rubber one, changed this to a leaden one which he used up to the great fire; immediately after the great fire used a three ounce tack hammer with good results.

Dr. Wilson, of Bloomington, thinks the greatest importance lies in fixing the first pellet, and the next in cohesion of the succeeding ones at first touch.

Dr. W. W. Allport, of Chicago, commends the thoroughness of the Essay; is especiallypleased to see the position taken upon the manner of keeping the gold while compacting, keeping the center higher than the edges. Dr. Droynelle and others, when crystal gold came first into use taught that the margins must be kept higher. He believed this to be an error, and spoke of it first some ten years ago, and again at the meeting of the American Dental Association at Cincinnati, and also before this Society at its last meeting in this city. This is the first time he has ever heard this manner advocated by any one else publicly; said Dr. Black had called attention to the fact that because merely the pulp was dead the tooth was not dead also, but he would go farther, and state, that the dentine may be dead to all intents and purposes and yet the pulp be alive.

Dr. Kennicott said he believes that he is the original advocate, as he is the oldest practitioner, of the present method of filling teeth with smooth pointed pluggers and adhesive foil. The two wise men of the nation who are now claiming to be the originators of this method not only got their first ideas from him, but he also furnished them with their first instruments. He had explained and illustrated his method at the session of the American Dental Association at Cincinnati, and also at the meeting of this society held in this city in '67, and now he thinks it rather rough to find others stealing his thunder and making capital out of his ideas. He had also used instruments which were neither smooth nor serrated points, and which, in his peculiar method, for which he claims originality and marked success, must be hard and highly polished, not merely worn smooth, and con-

structed with undulations at slight elevations upon the impinging surface. These being used with a rotary and oscillating motion break down and condense the gold, making a more uniformly consolidated and durable filling than can be obtained with serrated points.

Dr. Kilbourne, of Aurora, uses a broken pointed plugger more than any other: considers the granular surface better than any artificial serration; believes with Essay that density was not essential in a filling, but feared such an assertion might lead the younger members to carelessness.

After the transaction of some other business the Society adjourned until 9 A. M. next day.

THIRD DAY.

Dr. S. L. Edwards read an Essay on "Our Failures." In this he drew a very vivid picture of a practitioner who is so overrun with work that his system is like the miller who turns out his grist with particular regard for the toll, and who must attend to all calls in person because "there is no competent neighboring practitioner," this man sends gold plates to the jeweler, and silver plates to the tinsmith, if left with him to be repaired. The essayist here inserted an account of the number of operations performed in one day by this man, who comes out with a flaming local in the papers next day that Dr. Goodhue extracted ninety-three teeth yesterday, although it was not a good day for toothache. This, he says, was but a faint recollection from recent observations. The essayist believes that all impositions practiced upon the public by any one within the profession may fairly be imputed to the most worthy, and no man ought to excuse himself by retorting, "Am I my brother's keeper?"

To check the further progress of ignorance in the profession, he proposed that the fundamental law of this Society be so amended as to establish the least space of time allowed any member for which to take a student. Dentists should be free from all moral and physical stains, so that every word, act or thought, may prove a constant, pure and illuminating power; they should place themselves on record with those noble men of the medical profession who deny alcohol a place in *Materia Medica*, so that patients may realize what they have a right to expect, a clear eye, a steady hand and an unclouded brain.

Dr. Honsinger said that it seemed to him the title, "Dental quacks," would have been much more appropriate for the Essay, as he does not see how the case pictured can be termed "Our Failures," as we certainly do not plead guilty to such conduct.

Dr. Hurtt, of Peoria—This is no fancy picture, we have at least one member whom this essay pictures, although he is not an attendant at this meeting.

Dr. Honsinger—If there are any members present who know such a case, they are remiss in their duty if they do not bring it up for discipline.

Dr. Crouse hoped gentlemen would not introduce business at this time that would undoubtedly be attended to in due season. This case shows the necessity of selecting better material for our students. We take students merely for selfish purposes, and by so doing make an almshouse of the profession. We ought to encourage young men of capacity to enter the profession, but such young men must not expect to pay their way while pursuing their studies; they should have at least an academic education and a certain amount of native talent.

Dr. Sturgiss, of Quincy, did not believe in shutting the door to any one who may wish to enter because he may be poor or humble. If the power to become a shining light dwells within any man do not attempt to choke him off.

Dr. Crouse said his idea was that we ought not to take the poor because of his poverty and his assenting to act as a menial for us in consequence, but rather, if we find that he has the right material in him we should assist him by educating him gratuitously.

Dr. Wilson, of Bloomington—Knows of men whose only claim to proficiency in our profession is their dental pedigree, having had a father and grandfather who were dentists.

Dr. Kitchen, of Galva—In receiving students we ought to pay more regard to their moral character. No matter how well qualified a man may be, if he lacks in morality and integrity, he will disgrace his profession.

Dr. Kennicott called the attention of the Society to the fact that in Canada the practice of dentistry is regulated by law, and not only has the practitioner to appear before a Board of Exam-

iners appointed and paid by the government, before he is allowed to practice, but a candidate for studentship has also to appear before this Board, before he is permitted to be indentured; thinks this is a wholesome example to us, and we ought to profit by it.

Dr. Sherwood, we should in all cases make inquiries into the moral antecedents of students before receiving them in our offices.

President Willson—No obstacles and trammels should be thrown in the pathway of scientific research or any laudable enterprise, yet safeguards that shall certainly secure excellent qualifications, though they may prove a stumbling block to some, are invaluable. Had an application from an M. D. who "counts" that he might find time to extract and fill, as in his locality there is no dentist, if he knew well how; advised him to practice but one profession, suggesting the time necessary for thorough drill. That he should have the opportunity to learn more of our specialty is plain, but to what extent he may practice it and not be a dentist is doubtful.

Dr. K. B. Davis, of Petersburg, then read an Essay on "Dental Societies." While he does not detract from the just claims of dental journals and colleges as elevators of dental science, yet he claimed that to the free interchange of mind with mind at the meetings of dental societies, should be given the honor of exerting a more marked and direct influence. The clinics at these meetings have lifted the mist and fog of perplexity from many whose pupilage and after observation was limited, and thus reaching a greater number, do more good than the colleges. Those who do not attend the meetings because they cannot afford it, must be taught that they cannot afford to stay away; those who are indifferent because they do not understand the true aim of these societies, and those who already know so much that they cannot learn any more, must all be brought in. As one more means by which to secure the ultimate success of our profession the Essay advocated the education of the people.

The rules were then suspended for the transaction of other business.

Upon motion of Dr. Kilbourne (who stated that he had learned that Dr. Allport had "something new") Dr. Allport was

requested to explain his ideas before the Society, and two o'clock this P. M. was set apart for the purpose of listening to him.

The committee to whom was referred a letter relative to the formation of a dental league to oppose the Rubber Company, then recommended the appointment of a committee to correspond with Mr. S. S. White, of Philadelphia, as to the plans for such a league, and that the Society pledge itself to co-operate with him in any possible measures tending to the end proposed.

This report was adopted and the Chair appointed Dr's Cushing, Honsinger, and Allport, said committee.

Discussions were then resumed.

Dr. Honsinger said he hoped the power exerted by societies for the individual improvement of dentists would continue until every member of the profession would belong to at least one Society.

Dr. G. H. Cushing, of Chicago, then read an Essay on "What has the public a right to expect of the dentist of the present day?" of which the following is a very imperfect extract.

* * "A profession may be said to be a calling for which its followers are supposed to have particularly fitted themselves by long and extensive study, by means of which they have become reasonably well grounded in the great science which underlies their art, and which course of study is essential to qualify them for such calling, and is more extensive and especial in its character than is required of other occupations, not called professional. The distinctive difference between pratitioners of our specialty and those who follow avocations not called professional is, that the first profess to be able to treat intelligently certain diseases peculiar to a portion of the living body and that the public are in most cases unable correctly to estimate the character of such operations and services rendered, while with almost every calling not professional, men of ordinary intelligence can inform themselves of the quality of work which they procure to be done for them. Thus we are not only called upon to treat for good or ill a portion of the living body, but we also accept a trust and confidence that is reposed in none but professional men. * * * The crowning act which has marked our profession thus far is to be found in the acknowledgement which Harvard University has accorded to us as a profession, by en-

grafting upon the parent stem of her Medical Department ours as a recognized and honored specialty. This honor, the greatest yet conferred upon us, should stimulate every true man in the profession to renewed zeal and energy in the prosecution of his studies, and to more earnest endeavors to sustain a true professional character in order that he may bring no reproach upon our name so honorably endorsed.

The public, then, have a right to demand of the dentist of the present day: First, That he should sustain a true professional character; that is, one that commands the confidence of the public both as to one's profession and the integrity of his acts. Such a character presupposes the dignity due to a post of such great confidence, and can never stoop to make use of means for securing public favor, which, though perfectly justifiable and legitimate perhaps, in matters of trade, would yet be dishonorable and unbecoming in a professional man. * * *

Second, The public have a right to expect that the dentist of to-day shall be fully educated up to the highest standard which has been attained. * * * The Colleges are for the beginner, and no new young aspirant for professional honors should dare show himself before the public at the present day and claim to be even the humblest member of the profession without having gone through the preparatory training. Our periodical literature and our associations, are alike open to young and old, and are the points from which we must continually draw fresh inspirations.

Further, the public have a right to expect of the dentist, that he apply himself to the careful study of disease and that he shall be able, more or less, eventually to prevent or lessen disease, rather than to repair its ravages. * * * The time is not far distant when the dentist will be expected by an intelligent public to be thoroughly grounded in the science of medicine as well as its collateral branches. Not otherwise can the highest ideal of our specialty be obtained.

How, then, are we prepared to answer this demand upon us? Let each answer for himself, and let him not think that because his patients do not say so in so many words, that he is absolved from his obligations in the matter, for so long as he has the consciousness within him (and who has not) that these are the

proper claims of his patrons, he leads no true professional life without using his best endeavors to fulfill these demands.

President Willson—The question how to advertise is a very perplexing one. The professional man is generally underrated; sees no reason why he should not be paid the same as the tradesman or banker. The skill, and reputation for skill of the professional man, are just as much his capital as stocks and bonds are to the banker. The matter of defining where the professional man begins and the tradesman ends, is in this respect a difficult one.

Dr. Crouse—The public entrust their children to our care from early infancy up to the difficulties of maturity, and hence has a right to demand a greater scientific knowledge of us than of the tradesman. It has a right to expect a temperate life, a man is unfit for the proper and conscientious discharge of his duties towards his patients who indulges in excesses of any kind. The dentist should have system in his manipulations as well as in the intercourse with his patients. No one who does not attend society meetings can enter into honorable competition for excellence. The action of Harvard University is to be highly appreciated as it is a recognition of us as an honorable branch of the medical profession, and this action will, no doubt, stimulate the other colleges to renewed exertions.

Dr. Honsinger—The public have a right to demand that we be educated.

Dr. Hurtt, of Peoria—Some dentists hold that it is proper to advertise to the public what they would say to their patients in private, this is objectionable because we cannot explain, as we can personally in our private offices.

Prof. Judd said many outside of the profession have a misconception about advertising; it was commonly believed that the Medical and Dental Code of Ethics forbid advertising. This is not so. There is no objection to the insertion of a man's name and place of business, &c; it is not advertising, but *improper* advertising that is prohibited. When a man publishes that he has a peculiar and superior mode of performing an operation, or that he is the best operator, and operates for less money than any body else, he does that which is beyond the pale of honor or

decency. He was much gratified with the course taken by Harvard University, and would be the last man to detract from its just merits for its action in establishing a dental in conjunction with its medical school. Some years ago he conceived the idea that this was the proper way of establishing a dental school and the Missouri Dental College was founded upon this principle, and at his Inaugural Address to the first graduating class of that College, he showed how up to a certain point of divergence the studies should be the same, for the student in the specialty of dentistry and of general medicine, and when that point was reached the dental student should branch off to his special studies as would the medical to those specially requisite to him. He has a letter still in his possession from a committee of the Massachusetts State Dental Association asking for a plan of the model of the Missouri Dental College. He complied with this request and the plan was generally adopted in the formation of Harvard Dental College. Hence he thinks the honor of first recognition as a branch of medicine, of our science, is due to the St. Louis Medical College; he would not detract from the just merits of the Dental School af Harvard, as he believes it one of the first in the land, and is not sure but what it is destined to be the very first.

Dr. Sherwood—Have advertised from time to time; thinks the manner of advertising may show whether the advertiser is a quack or a scientific man, and good men ought to advertise in order to prevent the public from patronizing quacks.

Dr. Cushing explained, that in mentioning Harvard University especially, he did not intend to detract from the St. Louis Medical College its just claim for priority in that direction, but Harvard is more than a mere medical school or college, it is an University, and hence he used its action to show our recognized position among the learned professions.

Dr. A. W. Freeman, of Chicago—Thought to be recognized by as old and conservative an institution, an institution so slow to sanction innovations as Harvard University, where, aside from special training in medicine, jurisprudence and divinity is also taught, is a fact well worthy of especial mention. By this action students, while pursuing their collegiate course, can have in view still another scientific calling in which to perfect them-

selves without leaving their *Alma Mater.* Thinks an advertisement, that we have administered nitrous oxide gas ten thousand times, and that it is perfectly safe is not scientific; never gives it himself without some apprehension, and in some cases requires the order of a physician. Our advertisements should mainly consist in a conscientious discharge of our duty and a thorough devotion to our calling, and any man with these will soon get the position that rightfully belongs to him, without resorting to newspaper puffs.

The hour set apart for the purpose of listening to Dr. Allport having already passed, he was invited to the floor.

He illustrated upon the black-board his new theory as to the manner in which circulation, sensation and nourishment, is carried on between the dental pulp and the dentine: said that the manner in which these functions are performed had given rise to much controversy among physiologists, histologists and microscopists, then proceeded to review the different theories that have been advocated, and stated that that of Tomes, showing myriads of fibrils to project from the periphery of the pulp into the dentinal tubuli, which fibrils are claimed by him as the means by which vitality and sensibility are maintained in the dentine, is at this time the one most generally accepted; he believed Tomes a most honest and thorough observer, but doubts the correctness of a cut contained in his System of Dental Surgery, which represents these fibrils as protruding from the pulp to the dentine; believes that the artist who drew this must have drawn largely on his imagination, the defects in which must have escaped Mr. Tomes' notice; but said, allowing the figure to be reasonably correct, its appearance can be accounted for upon other, and he thought, better hypotheses, than argued, of that, however, he did not then propose to speak.

In giving his own ideas Dr. Allport stated that he hoped to draw out thorough criticism, and wished his ideas would be further investigated as he was equally ready to be convinced that he is in error, or have his theories confirmed by the investigations of others, only that the truth be established.

His theory is that the dentine derives its nourishment and sensation from one or more points, and this point or points be-

ing where there exists a connection or attachment between the pulp and the dentine.

This connection is always where dentification first begins and bears to the dentine a similar relation as does the placenta to the foetus, and from this point vital action in the tooth is sustained; uses the term placenta merely for the want of a better one. Through this connection nutrition is carried from the pulp to the dentine and sensation is transmitted from the dentine to the pulp and brain. The contents of the dentinal tubuli he believed elongated dentinal cells endowed with nervous sensibility, anastomosing and connecting with the pulp at the points of first dentification.

Thus, he said, when in a tooth with only one point of dentification or pulp attachment, this point be cut off, sensation and nourishment of the dentine would probably cease, with the exception of that which is derived from the alveolo dental periosteum, though the pulp itself may still be living. In teeth with more than one point of dentification or attachment, all the attachments must be severed before sensation is destroyed in the entire dentine. Thus by severing the attachment at one point only of a molar, sensation will be destroyed in that section of the tooth only. He has exhibited specimens showing this attachment at the point of dentification to Dr.'s Judd, Willson, Morrison, Cushing, Dean, and others.

Dr. Honsinger—How can amputation of part of the pulp then be performed without endangering the life of the tooth?

Dr. Allport—It would *endanger* the life of the tooth but not make it certain. If, however, a piece be cut out of the side of the pulp and the attachment with the dentine not interfered with, the pulp might heal and the vitality of the dentine still be preserved. A wounded pulp under favorable circumstances will heal nearly as readily as a wound in any part of the body.

Dr. Kennicott—Suppose the tooth becomes worn down by attrition and secondary dentine deposited at this placental point, and in this attrition the fibrils conveying sensation to this point become also obliterated, how would the life of the tooth be affected?

Dr. Allport—Should think that point of connection would recede the same as it does in the original dentification, unless the

attrition is so rapid that nature would not adapt itself to the new condition; sees nothing in this that would necessarily refute this theory. Nature is not only an industrious, but an ingenious worker.

Dr. Black—How is nutrition carried on throughout the whole dentinal substance?

Dr. Allport—If this theory is correct, from the point of cell attachment with the pulp, through their anastomosing connections throughout the dentine.

Prof. Judd—This idea is certainly a new and a very ingenious one. The existence of this connection has never had this importance attached to it by any writer on histology before, and he does not think that it must necessarily follow that all nutrient matter must first pass this point, because of this connection between pulp and dentine. The fluid oscillation theory has been long since exploded; he has been content to believe that there are filaments passing through the tubuli and anastomosing branches from the whole surface of the pulp. Whilst he was not prepared to condemn this new theory, should be very slow to believe it, until it has been more thoroughly investigated. It will require very strong proof to show that so careful and honest an observer as Tomes, was mistaken. There is no need in reasoning upon what is demonstrable; hopes histologists will investigate this matter more thoroughly as it is capable of being demonstrated. He hoped that Dr. Allport would give to the profession an elaborate paper, explaining his theory.

Dr. Hurtt then read an Essay on "Dental Fees," but owing to the lateness of the hour it was not discussed.

The Society then proceeded to the election of officers and the transaction of other business, after which it adjourned to meet in Rock Island in May, 1873.

Operative and Surgical Department.

PLUGGERS.

By G. O. Howard.

I have written and talked pluggers so much to my professional brothers, that I fear that if I write any more they will call me "old plugger." But as I have given this subject special study for the last two years, and advanced step by step in a direction that seems to me to be right, I feel it my duty to give all, each new development on the subject as soon as I prove it to be an *improvement*. In the March number of the Journal appeared an article under this head in which I advocated the use of the broken point, the next step I have taken beyond the broken point is the stamped point. A stamped point is made in the following manner: A piece of common steel is hardened full hard and broken, then draw the temper from the point to be stamped to a soft, place in a vice and stamp the face with the full hard piece, then temper as desired, and the plugger is ready for use. I am using a set of Varney's pluggers with the points stamped as above described, and after two months' use can candidly say I find no fault with them. By stamping I got a surface similar to the broken point with *very little* trouble compared with the *manufacture* of the broken point.

FILLING TEETH WITHOUT EXCAVATING THE CAVITIES.

By G. A. Mills.

All are more or less familiar with a class of concave cavities, made so by mechanical and chemical abrasion, and in them we find no softened or decomposed tooth substance, but a clear and glassy surface.

I have just made two operations on teeth with the class of cavities described, one a left inferior, and one a left superior ca-

nine, on the cutting edges. I first put on the rubber dam, then filed the ragged edges of high standing enamel, and then proceeded to set (four in one, and three in the other), of Dr. Mack's gold screws (which are one of the valuable adjuncts in dental operations). These screws I set at such angles as would secure the gold, and then proceeded to pack the filling with smooth oval-faced fillers. For gold I used No. 60 foil, which made two fine operations and restoring the contours. While alluding to the subject of oval-faced fillers (*smooth*) and heavy foils, I must add, that I cannot help feeling that I wish the profession could see the value that I do in the use of these instruments and the heavy foils, and I *will* say, I mean they *shall*, as far as I am able to have them, by the use of my pen and practical demonstrations. I can speak of their use, after a faithful trial of them for thirteen months. In closing, I would say that there is a vital point gained in the use of these screws, not only in the class of operations I have named, but in those of a more general character. From this fact it breaks up less tooth structure, and therefore endangers less the life of pulp.

P. S.—I am indebted to Dr. Atkinson for the idea of the use of the screws in operations first named.

Mechanical and Miscellaneous DEPARTMENT.

A WORD TO DENTAL PRACTITIONERS.---ELEVATION OF THE PROFESSION.

We hear much about elevating the dental profession, and if we converse with almost any one who occupies anything like a respectable position in the dental ranks, he will claim that he is in favor of elevating the professional status, and we have no doubt but that these desires for a higher professional attainment are, as a general thing, honestly expressed. But what do we mean by elevating the profession!

We can mean nothing less than raising the standard of literary and scientific acquirements of the members, and attaining a

clearer appreciation of the duties and responsibilities of a professional life.

But how many, who are at all times ready to assent to the importance of a progressive step in this direction, have ever done anything to help bring it about. We desire to occupy a position among the learned professions, but do we deserve an equality, for instance, with the medical profession in the estimation of the public, before we have become in fact their equals in literary and scientific acquirements? It is safe to come to the conclusion that we shall be justly estimated. If we take a survey of the whole ground we shall be obliged to confess that we must yet make great progress before we can justly claim such a position as the medical fraternity, for the most part, are anxious to accord us. For instance, among practicing physicians there are but a comparatively small number who are not graduates of medical colleges, whilst among practicing dentists there are to be found upon an average not one in ten who has a diploma at all, and among those who have diplomas, a much greater proportion have obtained them without having attended two full courses of lectures than obtains them in the medical profession. But how is it with those who are commencing practice at this day? Those who now commence the practice of medicine are in large proportion graduates of medical schools. Let us see how it is with our own. If we estimate the average working life term of the dental practitioner at twenty years, we shall see that at least seven hundred dentists commence the practice yearly. The graduates of the nine dental schools in this country furnish only about two hundred of this number yearly, whilst 500 enter upon the practice without a regular collegiate education. Is this a flattering exhibit, and what have you individually done to bring it about, or to better it? How many sacrifices have you made in order to do your part toward increasing the proportion of graduates in the profession? Many are anxious to obtain a diploma if it can be done without the loss of time and with but a small outlay of money, but there are too many who are about as zealous in this matter as was the man who was willing to sacrifice all of his *wife's relations* in the war for the preservation of the Union, and too few who are willing to make any real sacrifices themselves either of time or

money to elevate their profession, or even to elevate themselves. It is, doubtless, well to encourage students and others to attend college, and fit themselves for an honorable position in the profession, but a good example is more potent than any other argument, and men who have attained some reputation as operators or scientific men, are greater stumbling blocks than those who occupy a humbler place.

Lest we might not be clearly understood, we would state here that passing through a collegiate course does not of necessity make a man a learned man nor a skillful operator, but other things being equal he will be far in advance of the position which he would have occupied if he had not have had the advantages of a collegiate course. We also recognize the fact that there are many progressive and exceedingly useful men in the profession who are not graduates, but we have no doubt but that every one of them might greatly increase his usefulness. We would not have it understood, likewise, that we deem this the one thing needful to make the profession everything it should be, but we believe it of sufficient importance to call the attention of the profession to it in the hope that it may be productive of good.

But there are many other ways in which every practitioner is called upon to exert his influence for right. Dental schools are subject to the same influences as medical schools, or indeed nearly all other institutions of learning, and the short-sightedness of those who control them leads to the adoption of measures which may for the time increase the size of their classes but which ultimately detracts from the dignity and respectability of the profession. The practitioner who does not acquaint himself with the relative standing of the various institutions is derelict in his duty, and if he gives his influence to one which is not as deserving as others he is guilty of a great wrong—strikes a blow at the vital interests of the profession, which it is his bounden duty to cherish and improve. The responsibility of every practitioner is great in this matter, and the individual influence of every honest man should be exerted upon every proper occasion in the right direction. He should feel that he has a voice in everything that pertains to the professional welfare, and that he is not a mere looker on in the general struggle which is going on to achieve a high professional status for the

dental fraternity. If schools increase their classes at the expense of principle, or lengthen out their list of graduates by conferring honorary degrees upon all that apply for them, see to it that they receive no encouragement at your hands. Nothing will correct such abuses as readily as these undivided influences which can be, and should be, brought to bear against them by every intelligent and honest member of the profession.

J.

A NEW METHOD OF TREATING A FRACTURE OF THE JAW

By W. F. Griswold, Dentist.

On the afternoon of the 1st of May, 1872, while Prof. J. Wherrell was preparing oxygen gas in the laboratory of the High School, Leavenworth, Kansas, a copper retort containing

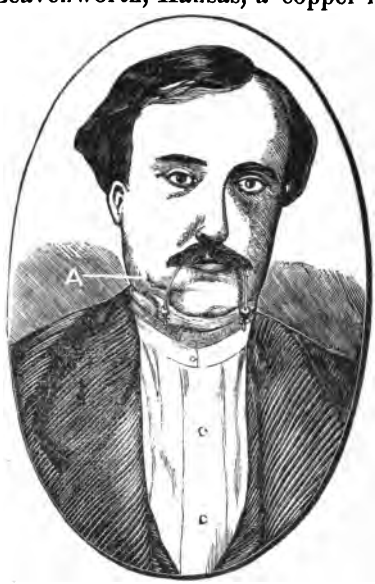


Figure 1.

a mixture of potassium chlorate and manganese dioxide, and which was placed inside of a cast iron stove, exploded, breaking the stove into an endless number of pieces, one of which struck the Professor on the right side of the inferior maxillary, making a wound about two inches long, which is represented in figure 1

by A, and fracturing the jaw in three places. (See figure 2.) At A the bone was broken transversely; at B transversely, and a fracture from A to B a little below the alveolar process. The part containing the four teeth between AB was completely severed from the rest of the jaw.

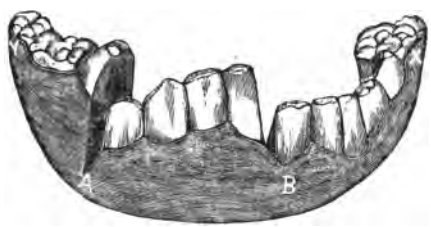


FIGURE 2.

Doctors Wever, Weely and Stiles were present almost immediately after the accident. The fracture itself was a bad one, but the wound made it a very complicated case. The first thing they attempted to do was to ligate the fractured parts with silk by passing the ligature between the first molar and second bicuspid, but the masseter muscle drew the parts out of position. This being a failure, they attempted to bring the fractured parts together and bind them in position with fine silver wire, but with no better success. The patient becoming exhausted, they stitched the wound together, and concluded not to attempt the setting again until the inflammation and swelling had subsided. The wound did not unite by first intention, and the problem before the surgeon was to bring sufficient upward pressure to bear on the under side of the inferior maxillary, to keep the parts in their proper position after they were set, without doing injury to the wound. Dr. Wever, who had charge of the case, became convinced that none of the modern appliances of surgery were adapted to the circumstances, and concluded to try Dentistry. Dr. Wever consulted me, and on the third of May he took me to see the patient, but the parts being so much swollen nothing was done. On the 5th I saw the patient again. The two days which had elapsed between my first and second visits gave me an opportunity of maturing the following plan:

1st. I took an impression in wax of the fractured jaw, without placing the parts in apposition. The impression was secured

with comparatively little difficulty, although the parts were much swollen. Figure 2 represents a cast from this impression and the position of the fractured parts.

2d. I took an impression of the superior maxillary, and made a cast from it.

3d. I obtained an articulation of the part BX, Figure 2. The patient obtained this articulation himself by biting on the wax as firmly as possible, assisted by a little external pressure applied to the part AY.

4th. I placed the cast of the superior maxillary in an articulator, and then diagonally divided the fractured plaster cast of the inferior maxillary through the points of fracture A and B, figure 2, dividing the cast of the fractured jaw into three pieces or sections, A, B, C, figure 3.

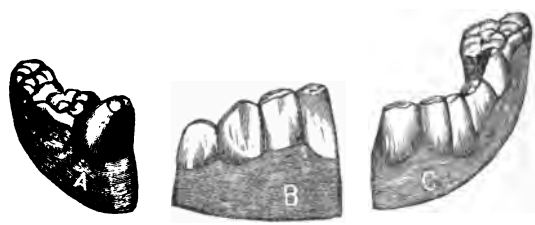


FIGURE 3.

5th. I placed the three sections, A, B and C in an articulator, and brought the teeth up in line, as shown in figure 4, and made them articulate with the teeth of the superior maxillary shown in figure 5.

FIGURE 4.

6th. I then made a vulcanized rubber plate, shown in figure 6, to fit over the teeth of the plaster cast of the inferior maxillary, and also made small openings in this plate, seen at A, B, C,

for the purpose of observing the position of the teeth, and of keeping them clean, which was done by syringing water through these openings.

FIGURE 5.

7th. I next took an impression of the face under the patient's chin, from which I made a gutta percha splint, shown in figure 7, having two projections, through each of which I made an aperture just large enough to admit the passage of a No. 13 wire.

FIGURE 6.

8th. I then made two clamps of silver wire, having thumb screws, and shaped them as seen in figure 8.

On the 7th of May, in company with Dr. Wever, the jaw was set, which was done by the patient himself. He took the vulcanized rubber plate, placed it in his mouth, arranged the fractured parts, and as each tooth had its own place in the plate, we found no trouble in getting the parts in position. After the splint had been fastened around the patient's neck, the parts

were held firmly and securely in position by means of the clamps, one end of each resting on the plate inside of the

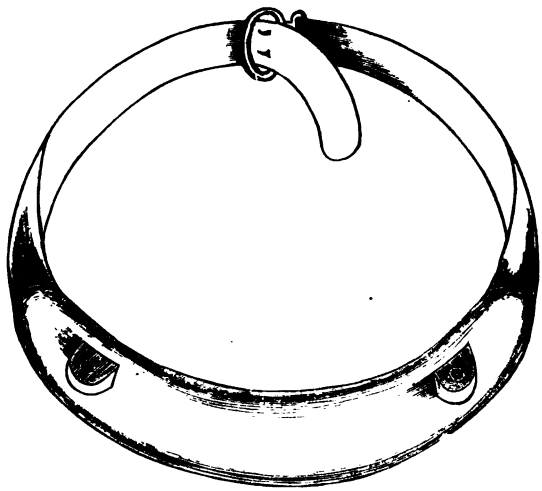
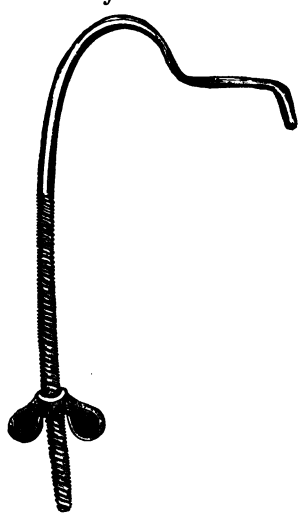


FIGURE 7.

mouth; the other ends passing through the apertures in the splint were fastened there by the thumb screws. (See figure 1.)



FIFURE 8.

On the 10th of May, three days after the jaw was set, the patient heard one of his classes in chemistry, and superintended

some experiments in oxygen gas, and by the 14th, just two weeks after the accident, he heard the recitations, and gave instruction in all of his regular classes. On the 16th of June the vulcanized rubber plate was removed, and all of the parts were found to be in perfect position, as is represented in figure 5, but owing to the four teeth between A and B, figure 4, being a little loose, it was deemed advisable to wear it two weeks longer, after which it was removed, leaving the patient in as perfect condition as he was before the accident.

Some of the advantages of the above method of setting a fractured jaw are :

1st. The operation of setting is painless.

2d. The patient has freedom of the jaw, and suffers very little inconvenience in eating, drinking and speaking.

3d. A perfect articulation of the teeth, and arrangement of the parts, are secured with an unerring certainty.

JOURNALISTIC.

The *Cosmos* for June opens with a continuation of Dr. Flagg's article upon "Dental Pathology and Therapeutics," and takes up "Congestion" and "Inflammation," recounting for the most part symptoms, results and treatment, as laid down by authors upon these subjects for the last ten or fifteen years.

Dr. McLain, of New Lisbon, Ohio, reports a case of fracture of the inferior maxillary bone, which he treated by applying an intermaxillary splint. The case is chiefly interesting in that the case had been in the hands of a surgeon some six weeks before the interdental splint was used, without any progress having been made towards a cure. The result was what we would have expected from the use of a well adjusted interdental splint, a perfect success.

We publish in this number of the JOURNAL a case, with illustrations, which will be sufficiently plain to enable any intelligent dentist to follow it without difficulty. It is scarcely possible to properly treat a fracture of the inferior maxilla without an interdental splint.

W. F. Winne, of Albany, New York, gives his experience with celluloid plates. He reports eighteen cases which

he has put up, and all are perfectly successful. The patients generally are *delighted* with them, and especially with "*their freedom from taste.*" We suppose that these patients were afflicted, or rather blessed, with a paralysis of the special nerve which presides over the sense of *camphor taste.* Then these plates were put up, many of them at least, before there was any improvement in the base, in fact, some of them before "it was generally offered to the profession," so that all of the obliquy which has been so meekly borne by the *material first placed in the market* was entirely undeserved, and why the company should attempt to improve anything so faultless as this base was is entirely incomprehensible.

Dr. Latimer has an article upon "The Relative value of Tin as a Material for Filling Teeth," in which he recommends it in poorly organized teeth which decay rapidly, in all deciduous teeth, or large cavities in molars and bicuspids, &c. We are well aware that tin foil will preserve teeth if properly packed, and even if it be but loosely packed, but do not think it is very well adapted for filling teeth. It is too soft in many places for permanent fillings, and not manipulated with sufficient ease to make it available for temporary plugs.

H. C. B. writes upon galvanic action in the mouth, produced by contact of a gold and an amalgam filling, and which was kept up even after the teeth were so separated that the fillings did not come in contact. This galvanic action has been frequently noticed, but usually only when the fillings of different materials were in actual contact.

Dr. Chupein, of Charleston, S. C., has experimented upon sensitive dentine, and advocates the practice recommended by Dr. Brockway, of Brooklyn, N. Y., which consists mainly, in keeping the cavity dry whilst excavating. The philosophy of this method is that moisture is necessary for the functional activity of nerve filaments, and if the terminal branches are dried they are no longer capable of transmitting impressions which would cause pain to the central ganglia. The practice seems to accord with common sense and is worthy of further trial.

The Gardner appeal case is ventilated at considerable length showing conclusively that in that suit the interests of the dentists were not considered. We were perfectly confident that

this case had been put up by Bacon for the sole purpose of getting a decision of the Supreme Court of the United States to assist him in his death grip upon the dental profession, but we did not know before how far the Supreme Court would allow itself to be used for such a purpose. We hope an opportunity will be given this tribunal to give a decision upon the pertinent points in this controversy.

S. S. White recommends dentists to cease the use of rubber and then form a league to litigate to the bitter end this monstrous monopoly. We are in favor of litigation, as it can be done with comparatively little expense to each practitioner. Let the sinews of war be collected and judiciously expended. Pay lawyers good fees, and see to it that they do good work, and let an exact account of all moneys received and expended be kept, and a full report thereof be given to all contributors that they may see what becomes of their money. We shall probably hear from other quarters soon, and we shall be disappointed if the dental profession do not take this thing up and carry it through We firmly believe that the Cummings' Patent can be beaten.

The *American Journal of Dental Science* has an article by N. E. Hollace, of Boston, upon "Sensitive Dentine" who bases his opinion, that the the dentine is "composed of minute tubes or hollow fibres" upon the microscopic observations of R. King Brown, and who believes the dentine supplied with nerve filaments, *having found them several times in removing diseased dentine.*

The report of Dr. J. B. Newbrough in relation to the death which occurred in his office some time ago, which we noticed in a former number of the JOURNAL, is found in the *American Journal* at full length. We see, from the testimony in the case, no reason for charging the death to the account of nitrous oxide.

The Medical Record has been stirring up some of the Medical Colleges lately by publishing some accounts furnished by correspondents, relating to the kind of students which are graduated at these institutions.

A charge was made by a Dr. Rodgers, of New York, that one of the New York Medical Colleges had graduated a man who "was a drug shop practitioner and a street car advertiser of

pills, sure to cure *female obstructions*, and shows that the Faculty had their attention called to these little irregularities before he was graduated. The Alumni of the School tried to whitewash the thing over a little, but did not succeed in covering up its deformity so as to make it very loveable in its external appearance. Next comes a letter from a correspondent in Japan, which gives an account of a young man who was a drug clerk in Yokohama who went to San Francisco, and returned to Japan after an absence of a few months with a diploma from a San Francisco Medical School and adds that two other similar cases have come under his observation. Stir up the Colleges, and if there be any honesty and integrity in the profession, those which deserve the most students will finally get them.

In the May number of the *Pharmacist* are reported several cases of poisoning in young children by taking Mrs. Winslow's Soothing Syrup, which, upon analysis, is found to contain morphine. There is no doubt but that many children have been killed by this nostrum.

In the *Nashville Journal of Medicine and Surgery* it is stated in an excerpt from the *Journal of Applied Chemistry*, that saccharate of lime is an antidote to carbolic acid.

The *Medical Examiner* reports cases of cerebro spinal meningitis, treated successfully with canabis indica. The remedy was given in large doses.

In the same journal is reported a case of croup which was cured by insufflation of powdered nitrate of silver. The last case was credited by the *Examiner* to the Doctor.

The third number of the "*Correspondenz Blatte fur Zahnartze*," a German journal published by C. Ash & Sons, Berlin, is at hand. It contains three articles taken from the *British Journal of Dental Science*, three from the MISSOURI DENTAL JOURNAL, and three from the *Cosmos*, which, with some other selected articles and a few original communications, make up a journal of respectable size and appearance. It is published upon the same plan as most of the American journals, making, doubtless, a valuable advertising medium for its proprietors.

J.

ANSWER TO CORRESPONDENTS.

We are in frequent receipt of communications relating to the eligibility of this and other Western States as a field for dental practice.

We propose to answer in this communication some of the questions which are constantly being addressed to us upon this subject. In the first place there are plenty of good locations for good reliable men who are thoroughly up to the times, and who have a thorough dental education. On the other hand, we have an abundance of so-called dentists who are ignorant and unprincipled, but it is gratifying to be able to state, that for the most part, they are understood and *appreciated* here as well as in any State in the Union. We would not advise any one to come to this State to practice dentistry unless he was a graduate of a respectable school, and felt honestly competent to perform the duties of a practitioner in such manner as to be able to stand a fair criticism by those around him. It is his standing in the profession that will finally determine his standing in the community where he lives. Applications for competent practitioners are frequently made to us, but invariably for graduates that can be recommended. The number of such is as yet too small to meet the demand. There are many towns and cities in this vicinity which would make excellent locations for good men, and we should like to see them filled with good live men, such as could afford to attend societies and associations, and keep up with the advancing spirit of this progressive age. We have fossils enough in this State, and can hold out no inducements to such emigrating here. J.

We are indebted to Dr. S. C. Wilson, of Bloomington, Ill., for two valuable specimens of teeth for the Museum of the Missouri Dental College. One was a sap. sapientia wholly imbedded in the superior maxilla, but firmly attached by osseous union of its fangs with the fangs of the second molar, and was brought out by extracting the fangs of the latter. The sapientia occupied a horizontal position in the jaw. The other, consisting of an inferior bicuspid tooth attached through the medium of a broad, thick, osseous plate, with a mass which simulates to a consider-

able extent, the crown of a molar, but without any fangs, was taken from a dentigerous cyst located upon the inner side of the inferior maxillary bone close to the second bicuspid tooth. We did not learn whether there was a bicuspid wanting in the arch upon this side or not. The Dr. will please accept our thanks for these favors.

PASS HIM AROUND.----A KANSAS CITY DENTIST FOUND GUILTY OF VARIOUS CHARGES, AND EXPELLED.

KANSAS CITY, Mo., July 3d, 1872.

TO THE PUBLIC.

The Kansas and Missouri Valley Dental Association met in regular session on Tuesday, July 2d, and took action upon certain charges preferred against one H. J. Traver—member—to wit:

First.—Incompetency.

Second.—Lack of veracity.

Third.—Unprofessional advertising.

Fourth.—Displaying specimen work upon the street.

Fifth.—Holding a degree of "Doctor of Dental Surgery," that had been conferred by a Dental college not recognized by the respectable and legitimate profession at large.

The charges were fully sustained by the evidence. Abundant proof was offered showing that Dr. Traver had been guilty of dishonest practice toward both his patients and the community at large, and that he is therefore unworthy the recognition of the profession or the confidence of the public. Dr. Traver was expelled by the unanimous vote of the Society. As N. J. Traver has recently departed for parts unknown, the Kansas and Missouri Valley Dental Society desire to warn the good people of neighboring cities against an impostor, quack and scoundrel. It is earnestly desired that he be passed around.

Respecfully,

J. E. CRAVENS, Sec'y.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] AUGUST, 1872. [No. 8.

[*From the St. Louis Medical and Surgical Journal.*]

AFFECTIONS OF THE EYE FROM NEURALGIA OF THE FIFTH PAIR OF NERVES, CAUSED BY DISEASE OF THE DENTAL ORGANS.

BY H. Z. GILL, M. D.

[Read before the Missouri State Medical Association. Session 1872.]

(*Continued from page 249.*)

The Am. editor also adds cases from his own manuscript. "Mr. Travers has seen an incipient amaurosis distinctly arrested by the extraction of a diseased tooth, when the delay of a similar operation had occasioned gutta serena on the opposite side two years before (Synopsis of Diseases of the Eye, p. 305, 2d ed.); and Richter relates a case of a lady who had been blind for years, and who experienced a short recovery of her sight on having a tooth extracted (Anfangsgr). Mr. Caffe quotes the case of a person who had an upper molar tooth excavated by caries, and who, whenever a portion of food entered its cavity, became immediately amaurotic in the eye of the corresponding side. The amaurosis ceased as soon as the cavity of the tooth was cleared. —(*La Lancette Francaise,* 22 Aug., 1839.) Dr. Watson states that the son of a physican of his acquaintance in London became blind in one eye on two or three occasions without obvious cause, and with no visible change in the organ, and the blindness on each occasion went off, *apparently,* in consequence of the extraction of some teeth which had grown irregularly (Lectures in *London Med. Gazette,* 5 Feb., 1841); and Dr. Ashburner says that such cases are common (ibid. p. 712.)"

Mackenzie, page 997, reports a case: A healthy, middle-aged man, a ship-painter by trade, desired Mr. Howship's advice, in 1808, on account of a small tumor situated on the crown of the head. It caused headache and amblyopia. Both were cured by its removal.

CASES FROM GARRETSON.

"*Diseases and Surgery of the Mouth and Jaws and Associated Parts. Amaurosis caused by Crowding of Teeth.*— In this case (reported by Mr. Hancock in the *Lancet* of 1859, p. 80), a boy aged eleven, whose sight had been previously unimpaired, found upon waking one morning that he was entirely blind. About a month afterwards he was admitted to Charing Cross Hospital, when it was discovered that his teeth were much crowded together; the jaws in fact not being large enough for them.' Accordingly, two permanent and four milk molar teeth were extracted, and on the same evening the boy could distinguish light from darkness, and on the following morning could make out objects.' From this time his sight rapidly improved, and he was dismissed cured on the 28th (eleven days after), the only treatment beyond the removal of the teeth being two doses of aperient medicine.'"

Case, page 461.—"Amaurosis consequent on 'Acute Abscess' of the Antrum, caused by a Carious Tooth. By S. J. A. Salter· Surgeon-Dentist to Guy's Hospital. Read before the Royal Medical and Chirurgical Society. The cases upon which this paper was based was one of unusal severity, and of exceptional complications. The patient, a young woman twenty-four years of age, was attacted with violent tooth-ache in the right upper first molar, which was followed by enormous swelling of the side of the face and intense pain. The eyeball then became protruded, and she soon after perceived that she was blind. Shortly after the establishment of these symptoms 'abscess' of the antrum pointed at the inner and then at the outer canthus, and a large discharge of pus at both orifices followed; these orifices soon closed, and the general symptoms of the part continued unchanged—the swelling of the face, protrusion of the globe, and blindness. This state of things lasted for about three weeks, when the patient was sent to Guy's Hospital and admitted. At this time the patient exhibited hideous disfigurement from swelling of the face, œdema of the lids, and lividity of the surround-

ing integument. Upon examining the mouth, it was found that the carious remains of the first upper right molar appeared to be associated with and to have caused the disease. Together with the other contiguous teeth this was removed, and led by an absorbed opening. into the floor of the antrum. The hæmorrage which followed the operation was discharged partly through the nose and partly through the orifices in the cheek, as well as from the tooth-socket, showing a common association of these openings with the antrum. The condition of eye constituted the most important system and the most distressing. The sight was utterly gone; the globe prominent and everted. There was general deep-seated inflammation of the fibrous textures of the eye. The pupil was large and rigidly fixed; it did not move co-ordinately with the other under any circumstances. Some abatement of the symptoms followed the extraction of the teeth; but it was found that there was a considerable sequestrum of dead bone, which was removed. The necrosis involved the front part of the floor of the orbit, the upper cheek dortion of the superior maxilla, with the infraorbital foramen, and a large plate of bone from the inner (nasal) wall of the antrum. The removal of the dead bone was followed by the immediate and complete cessation of all inflammatory symptoms; but the eye remained sightless, and the pupil rigidly fixed. About five weeks after the removal of the dead bone, it was noticed that the pupil of the affected eye moved with that of the other under the influence of light, though vision in it had not returned. The eye was frequently examined at this stage with the oshthalmoscope. All the structures, including the retina, appeared healthy, except the termination of the optic nerve, which was perfectly white and anæmic, while that of the other eye was pink and natural.

"The author referred to two other cases essentially similar to his own. The first (unpublished) occurred in the practice of Mr. Hollock of St. George's Hospital. The patient had intense inflammation of the entire maxillary region of one side caused by a carious tooth. It implicated the whole face and the contents of the orbit, but was not attended by 'abscess' of the antrum or necrosis of the bone. The inflammation completely ceased on the removal of the tooth, but the sight was permanently lost; the pupil was at first fixed, but afterwards moved with that of the other eye

"Another example, closely resembling these, was published by Dr. Bruck in Casper's *Wochenschrift* for 1851. It was, however, more chronic, and the loss of vision was only temporary."

"The author concluded his paper by suggesting that the serious ophthalmic symptoms depended on the nerves of the eye being involved in a plastic inflammation in their course external to the skull and before their distribution; that the optic nerve was permanently damaged, as shown by the permanent blindness; and that the third nerve was temporarily implicated, as shown by the temporary fixedness of the pupil; and the eversion of the eye from the first seemed to indicate that the sixth nerve was less or not at all involved. Finally, the author left it an open question whether the anæmia of the optic nerve, as displayed by the opthalmo scope, is to be looked upon as a cause or consequence of its suspended function." (*Lancet.*)

"*Sympathetic Action.*—In the course of an article or 'Amaurosis and other Disorders of the eye, resulting from injury of the Terminal Branches of the Fifth Pair of nerves," in the *Am. Journal of Medical Sciences* for July, Dr. D. Lente gives the following interesting observations upon the sympathetic relations of the teeth and eye: 'Middlemore says that amaurosis may arise during the period of dentition; it may take place from the irritation of a carious tooth, from laceration or other injury of the supraorbitary nerve; and then relates a case, * in which Mr. Howship removed an encysted tumor from the scalp, which produced marked and permanent improvement in the vision.'"

Other cases of injury and of tumors about the eye, affecting the sight, and their cure or removal restoring vision, are given. Dr. Lent quotes Marshal Hall, from London *Lancet* for 1837-38, in which the latter, speaking of Magendie's experiments, says they "are not the only evidence we possess of the influence of the fifth pair on vision." "In an interesting case under my own care, a partial amaurosis of the right eye has arisen apparently from caries of the upper canine tooth, of the right side" "It was augmented by unsuccessful efforts at extraction. It has not ceased, however, since extraction was effected." "Hennen says: 'I have met with one or two cases of amaurosis from

*See Mackenzie, p. 997.

wounds of the supra-orbital nerve.' 'Scarpa,' he says, 'doubts of the possiblity of the cure of amaurosis from wounds of the supra-orbital nerve, and mentions Valsalva's case as the only one on record.'" Mr. Hey, however, states another in the *Medical Observations and Inquiries*, vol. 5. M. Larrey mentions another. Vicq d'Azyr, who gives a case of amaurosis from a wound of this nerve, in the *Histoire de la Societe Royal de Medicine, annee* 1776, says he has since divided this nerve in quadrupeds, "but without producing any such effect." Mackenzie says, p. 151, that bruising and tearing that nerve was followed by blindness.

"That defective vision may result as the direct consequence of irritation of the terminal branches of the fifth pair may also be inferred from the effects of remedial applications to these nerves, and from the phenomena observed to follow irritations and injuries of other branches not so immediately connected with the eye." "'Morgagni, Notta, Deval, Tavignot, and others,' says M. Echeverria, 'have known amaurosis to be caused by neuralgia, and to disappear as soon as the neuralgia was cured.'" "There are several features in the rather remarkable history of Antoinette H. which require some notice before concluding this article. It was objected by a very distinguished oculist, to whom the case [one in which part of a gun-cap was accidently driven into the pericranium of the left side of the forehead, producing amaurotic and other disturbances] was related soon after its occurrence, that the wound being on the left side, the amaurotic symptoms should have affected the the left eye and not the right. But this is not more remarkable than disease in one tooth should occasion a violent toothache in another perfectly sound; or that irritation of the nerves of the stomach by acidity should induce violent neuralgia of the supraorbital nerve; or that an irritating application to the mucous surface of the eyelids should determine also an immediate irritation of the Schneiderian membrane, succeeded by violent sneezing; or that simply touching the membrane tympani with a probe should sometimes give immediate relief to a toothache." (*Dental Cosmos.*)

A case in point taken from the *Revue de Therapeut. Medico-chirurg.* for August, 1871, shows other ophthalmic affections from

diseased teeth; "Charniere, of the 98th line regiment, came into the hospital the 3d of July, for inflamation of the left eye. The disease had commenced the previous February, whilst he was a prisoner in Prussia. He was there seen numerous times by the doctor charged with attending the prisoners. and followed his advice without success. The 20th of April he was sent to the hospital of Krekow, where he remained two months without receiving any relief, until he was sent back to France. When he entered the hospital, the note was: 'July 3—Ocular and palpebral mucous membranes both very red, the radiating vessels crowding up to the cornea; continuous pain exacerbated at intervals and especially at night; photophobia intense, head heavy and painful, tongue coated, appetite poor, pulse small and frequent. Treatment: ten leeches to the angle of the left jaw, collyrium of sulphate of zinc, diluent tisane of one-half a quart. 4th—marked improvement; treatment continued without the leeches. 5th and 6th—still better. 7th—a blister to the nucha. 9th—last night the worst that he has had.' Finding his patient becoming worse, Dr. Blanc, remembering an article of Dr. Tavignot (*Revue de Therap. Medico-chir.*, April 1871), now inquired into the condition of the man's teeth, and finding the first upper molar of the left side very bad, extracted it. After the operation there was rapid and steady amendment of all the symptoms. On the 15th of July the man was surprised reading a newspaper, and on the 21st was dismissed cured." (*Dental Cosmos*, Dec., 1871.)

My friend Dr. Homer Judd, an eminent dentist of this city, informs me that he had in his practice, some years since, a patient whom he entirely relieved of two obstinate attacks of "conjunctivitis" by extracting teeth. The relief was immediate, and the cure almost as rapid. I presume the conjunctival affection was mainly congestive. He believes the majority of the neuralgias of the fifth pair are dependent upon disease of the dental organs.

In the *Am. Journal of Med. Sciences*, July, 1870, Prof. S. D. Gross of Philadelphia, reports five cases of a "Form of neuralgia of the jaw-bones hitherto undescribed," the pathology of which he says "seems to be compression of the minute nerves [irritation] distributed through the wasted alveolar process, de-

pendant upon the encroachment of osseous matter upon the walls of the canals in which they are naturally inclosed.

Other cases might be added from our own observation, were it necessary, in which dental irritation was the primary and trigeminal neuralgia the secondary cause of ophthalmic affections.

Garretson takes the standpoint that all "neuralgia is due to a cause, and that *neuralgia of the fifth pair of nerves* is largely due to irritation reflected from the teeth"; he then classifies the causes as follows:

"1. Sensitive dentine.
2. Direct or indirect exposure of dental pulp.
3. Confinement of pus or gas in pulp cavity.
4. Diseased state of periodonteum.
5. Recession or absorption of the gum or alveolus.
6. Eruption of wisdom-teeth.
7. Abrasion or wearing down of teeth.
8. Sympathy.
9. Granules of osteo-dentition in the pulp."

While it is important in a case of trigeminal neuralgia, to examine as to the presence of any one of these causes, yet I shall speak here of the last only, viz., *granules of osteo-dentine in the pulp*. They are small masses of osseous material, very hard formed in the pulp, or in the pulp cavity. Their presence is very likely to give rise to compression, irritation, and inflammation of the nerve, accompanied with excruciating pain. The tooth may be otherwise perfectly healthy. As they are permanent, the result—the pain—must also be permanent. "Teeth thus affected may give no external appearance of the presence of their internal occupants, but present every indication of health; no discoloration, no soreness, and oftentimes no local pain, this manifestation being situated at some other portion of the body, as the *eye*, ear, scalp, or face; sometimes along the branches of the fifth pair of nerves, sometimes even more remote. This pain is paroxysmal in character, and is usually treated for idopathic neuralgia, the cause being unrecognized." (*Dental Cosmos*, Jan., 1872.)

My friend Dr. Morrison, dentist of St. Louis, gave me, a few days since, the account, in brief, of *a very interesting case of pulp*

ossification: "A lady, aged about 40 years, had suffered from pain in the side of the face for about two years; teeth all sound and gums healthy; but she insisted that the pain was in the region of the upper molar teeth, and at her urgent request, having once or twice refused, we consented to extract the first molar. About a quarter of an inch of the palatine root was left behind, from which, however, came the perfectly shaped pulp in a semi-ossified or cartilaginous condition. Specimen herewith presented. Patient free from pain since."

In these cases much care is required to ascetain the tooth or teeth in which the pathological change has taken place; and the practitioner who does not feel competent to the task, should send his patient at once to a reliable dentist.

We have thus endeavoured to present to the profession one of the obscure subjects; and by presenting cases, typical of their classes, together with some of the newly discovered causes, we hope to assist in the comprehension of the exciting causes, and to facilitate the treatment of some at least of these painful and preplexing affections.

I hereby acknowledge my obligations to Dr. Morrisan for rare specimens of granules of osteo-dentine, and of ossification of the pulp of teeth.

1117 PINE STREET, ST. LOUIS, Mo.,
April 18, 1872.

UREA FORMED IN THE LIVER.

Next to the formation of the urea, physiologists are most interested in the *place* of its formation. Is the urea first made in the blood, and have the kidneys only to eliminate it? Or are the kidneys the place where it takes its origin? To solve this contested question, N. Grehant repeated in C. Bernard's laboratory the following decisive results. He extirpated both kidneys of a dog, and found after this operation, that the blood contained more urea than before. The same result followed the placing of ligatures on the ureters. Both experiments proved the accumulation of urea in the blood.

If the blood of the renal vein and artery of a perfectly healthy kidney be examined, it will be found that the venous blood con-

tains less urea than the arterial, which shows us that some urea is lost during the passage of the blood through the kidneys. If the two ureters are tied so that no urea can be eliminated, the blood in the veins and arteries contains the same percentage of urea. This is an indisputable proof that the urea is not formed in the kidneys, otherwise the venous blood would contain more urea than the arterial. The great mass of urea in the blood after the extirpation of the kidneys proves the same, for if this were not true the production of the urea would cease after the kidneys have been extirpated. To determine the quantity of urea, Grehant used Millon's fluid.

Induced by the observations of Grehant, Cyon attempted to prove that urea is produced in the liver. To this end blood was taken from the carotid of a dog which had not been narcotized, quickly defibrinized, and a part of it placed in an apparatus by means of which it was to be forced through the liver. These tubes were introduced respectively into the *vena cava inferior*, *arteria hepatica*, and *vena portæ*, then the liver cut out of the body and placed in a vessel heated to the temperature of the blood. The first tube was connected with an aspirator, the second and third with the above-mentioned apparatus, in which the blood was contained. The circulation of the blood through the liver could be kept up by means of a connecting tube, which returned the blood on its arrival in the aspirator into the first vessel, from which it could be again forced through the liver. After the blood had been several times passed through the liver, it showed a greater percentage of urea than a like quantity of the active blood of the same animal. Cyon draws, therefore, the conclusion that the liver is the place of formation of the urea. He promises, at the same time, to follow these short communications with a more elaborate article. (Hr. E. Cyon, "Ueber Harnstoffbildung in der Leber," Centralblatt fur die medicinischen Wissenschaften, 1870, No. 37, p. 580.)—*Brit. & For. Med. Chir. Review*, Jan. 1872.

Operative and Surgical Department.

[*From the German of Dr. G. v. L., in Der Zahnarzt.*]

CORROSION, EROSION, DENUTION, ABRASION AND ATROPHY, OF THE TEETH.

Translated by C. E. Koch.

About these denominations and designations of phenomena of disease in the teeth, the reader is probably as much in the dark as is the writer himself, who has undertaken the following explanations and descriptions of the above nomenclature, for the purpose of instigating investigation of more astute thinkers, and to give more light and a better understanding upon these forms of diseases.

In our convention last year, at Berlin, discussion upon "Corrosion of the teeth" was instigated by two central incisors, sent in by letter, which showed upon the anterior surface of their necks smoothly polished notches 1½ lines wide, which, according to the differently expressed views, were explained to have been caused by hard brushes and gritty tooth-powder,—by grinding together of teeth during the night (?),—by grinding with a fine file—by friction of the places with the finger and salt—and by an acid secretion of the gums.

As the discussion upon this important matter was only very short, through lack of time, and as in the different text books we find so little that is positive and complete, the following, though not definite, explanations may be read with interest.

Corrosion.—By this we understand a destruction by (acid) etching. But such etching, especially when it concerns a hard body, leaves the appearance of a soft granulate or flaky surface. From this it follows, that the designation "Corrosion" is entirely unfit for the pathological change in the above named two incisors, as the affected spots in these teeth appeared hard, and as though they had been rubbed, and polished with a fine file. The designation of "Corrosion of the teeth," was entirely new to me, I have searched everywhere, but in no place have I been able to

find this designation of a pathological appearance of the teeth; but the designation

Erosion is used to describe a form of disease which consists in a constitutional or congenital defect of enamel formation. These forms of erosion have been classified and described by some authors (Maury and Delabarre) according to the degree of the defect, namely: First, consisting in irregular light or dark-yellow spots upon the enamel, without thereby effecting the smoothness of the surface: Second, this degree is distinguished by small holes or irregular pits, which are extended into yellowish lines: Third, in this degree, aside from the enamel the dentine is affected, and often in such a manner that the tooth may be destroyed to within a third of its natural size. Of none of these three appearances can it be mantained that they, like caries, have arisen through corrosive agencies, *i. e.* as the result of external chemical disintegration, but the character of this destruction must have another cause. Hence this form of disease, has with reason not been classed with caries, but been named with a more specific designation as an independent disease, "Erosion."

Abrasion is understood as the wearing down of the cutting edges, which occurs at times in the upper, and sometimes in the upper and lower incisors. This destruction commences at the central incisors and spreads over all the anterior teeth, often with such rapidity that in two or three years the teeth may have lost half their substance; mostly, however, the progress is more chronic. I remember to have seen only one such case (10 years ago in a young Englishman, Student of Medicine in Heidelburg.) It is remarkable that all such cases known to me, through other observers, (Harris, Bell, McCabe) were seen only in young men. —Is it possible that this is owing to smoking,—that is holding the cigar with the teeth. (?)

Denution, or better, *Denudation*, is one of the most remarkable phenomena of disease of the teeth, notwithstanding it occurs quite frequently, still the cause and nature of this disease is yet entirely unknown, so much so, that most text-books do not even mention this form of disease.

The disease consists in a gradual wasting of the enamel upon the labial surface, while it, according to Harris, first attacks the central incisors and extends to the cuspids and bicuspids, yes,

sometimes to the first and second molars. Generally it forms a horizontal groove, which appears as regular and smooth as if it had been made with a file. But not only the enamel but also the dentine is in time attacked, and occasionally the nerve is exposed. However, this destruction makes but very slow progress, and it often takes years until the enamel is destroyed, and even the dentine resists this slowly destroying cause for years. But what is the cause of this denuding (tissue away-washing) process? The brief answer to this question is, that no author as yet has given a satisfactory explanation; yet it is of interest to learn the different attempts at explanation.

Hunter, according to *Harris*, was the first to mention this form of disease, and called it "Caries through denudation" and he believes that as this disease only attacks, and is limited only to certain teeth, it is a disease which is "inherent" to these particular teeth, and not dependent upon external causes.

Bell is also uncertain about the cause of this disease, but believes that this phenomena must be brought in connection with the layerwise deposition of the enamel, during original formation. As is known, the enamel is first formed upon the surface of the tooth and deposits itself in circular layers around the crown of the tooth up to its neck. It would, therefore, not be improbable, that from some cause which occurred during the layerwise deposition, certain circular layers of the enamel would be more susceptible to mechanical wearing down (abrasion) than the other stronger layers.

Fox acknowledges openly and honestly, that he cannot announce the cause of this disease, but believes that a solvent quality of the saliva, yet unknown to us, may be the exciting cause.

Others believe in mechanical causes, such as, too stiff brushes, too gritty tooth-powders (charcoal, tobacco-ashes, &c.); or chemically acting dentifrices upon naturally weak tooth tissue.

I add to this, that I have always been very much interested in this form of disease, which I have had occasion to observe quite frequently, so much, that whenever a new work on Dental Science appears, I search first for what the author may have to report new upon this matter. But mostly this disease is not mentioned at all, and when the last edition of that so excellent "Atlas,"

of Heider & Wedl, appeared, and I did not find in it a description or mention of this form of disease, I could hardly reconcile this with its otherwise completeness. Hence it afforded me great pleasure, when in our last meeting, at Berlin; two teeth sent in by letter gave rise to discussion of the above form of disease, but I was entirely unsatisfied, as no one was capable even to give an approximately satisfactory explanation. Notwithstanding, I have since then repeatedly referred to my books and journals, to be led by them upon a measureably correct path; I am still no wiser than before.

Yet, I believe to have found a new explanation, which I permit myself to add here:

The disease of the two teeth sent to the Berlin convention, is to be designated by "*Denudation*," and not as was done by "*Corrosion*," for the disease is charactized by a horizontal groove with smooth surface.

But by what is this caused? If we arrange the different exciting modes of explanation, we have, first, external, second, internal, and third, external and internal causes.

The external are again divided into external mechanical and external chemical influences. The explanation through external mechanical influences (hard brushes, powerfully acting tooth-powder, &c.,) is not tenable, because the teeth that are equally acted upon by improper brushes, or tooth-powder, would have to be equally attacked; but the disease occurs mostly upon the front teeth, and occasionally, where a brush has never been used.

And so would the explanation through external chemical influences, (especial property of saliva, friction of the lips, &c.), not only concern individual teeth, but equally the whole anterior row, which is well known not to be the case, as it occurs, that for instance, only the cuspids are attacked be denudation, while all the remaining teeth remain healthy. Hence, as a probable explanation, only the internal causes remain, either solely of themselves, or as predisposition for external influences.

The question is only, have we anything analagous for this kind of destruction, as for instance, in caries of the teeth have we an analagous law, in caries or in necrosis of the bone? The affirmation of this question has led me to a mode of explanation, which has, as yet, been nowhere indictated.

According to the newest investigations upon absorption of the deciduous teeth, we know that this does not originate, as was formerly erroneously believed, by mechanical means, through pressure of the permanent tooth upon the nutrient vessels of the deciduous — but that through a wise law of nature, at the time when the deciduous tooth is no longer needed, a fungiform or fleshy substance is found at the apex of the deciduous tooth, through which resorption of the root is carried on.

But often this etching absorbing fluid does not act from the apex of the root, but begins on the side of it, through which means then, as every dentist knows, it occurs occasionally that the deciduous teeth have only a long splinter of the root, but this is of the entire length of the root.

Now when we examine the inner smooth surface of a root, (through resorption by a specific fluid for this purpose) of such a deciduous tooth, and compare this with the smooth surface caused by denudation, must we not conceive the thought that a similar process of resorption of the tooth tissue may serve as an explanation of the specific cause of the origin of denudation?

The fact that denudation always appears upon the neck of the tooth, that is where a secretion from the margin of the gum occurs which may have this resorption as a consequence, would let us accuse the character of this secretion with being the exciting cause. Still I do not believe in such an entirely external cause, but feel inclined to assume at least a predisposition of the tooth concerned, for the reason that in all cases, only certain teeth are attacked by it.

There remains still one more designation of dental disease belonging here, but which is also still enclouded in darkness, namely:

Atrophy of the teeth.—By atrophy, which may be general or local, we understand a wasting away through a deficient nutrition. Such locally interrupted nutrition may arise in hard as well as soft tissue.

Hence, we speak of atrophy of the bones, the muscles, the kidneys, &c. Concerning the teeth, there occurs as a rule in advanced age, atrophy of the dental pulp and nerve. When these organs begin to waste away, the dental canal becomes narrower

and narrower so that in teeth of very old persons the canals appear often entirely closed.

In the long bones, as is well known, the opposite relation exists, in which, in old age the canals become enlarged, and the marrow increases.

Farther, atrophy of the roots occurs in the teeth; which arises from a chronic inflammatory process of the dental nerve, in consequence of which the root, *i. e.* the cementum of the root, is deprived of its nutritive principle, namely, the periostei dentalis; and which also occasionally extends to the dentinal tissue, but is there better designated by the word resorption. (Necrosis of the root of the tooth is perhaps the best appelation for acute dentinal destruction.) But there is also an atrophy of the enamel, which I wish particularly to examine, as there are different opinions dominant in regard to its origin.

This atrophy consists, according to the degree of intensity, either in small white, yellow, or brown points, appearing as though the enamel was not properly fused, or occurs in larger spots or stripes, especially in the incisors. This is looked upon as proof that the enamel formation was interrupted. But, not only the enamel, but occasionally also the dentine, shows this character of atrophy, which occurs especially frequent in the bicuspids and molars, and has the appearance of a more or less smooth brown surface, resembling a plate of wax. The cause of such atrophy, has by the authors, been declared to be an interruptive pause during the formation of the enamel, and the last stages of dentine formation (*dentification?*) caused by some inflammatory disease (for instance, measels, scarlet fever, rash, &c.) through which nature was not able to make the regular and continuous healthy deposits of phosphates upon the teeth.

Although this manner of explanation seems enlightened, and is by most authors declared to be correct; and especially for the reason that the corresponding teeth of the right and left sides always appear equally atrophied, yet there are some authors (W. Lintoll) who ascribe the cause to medicines administered, and especially preparations of mercury.

Although it is not to be denied, that certain medicines exert a very deleterious influence upon the teeth, (chalybeates and preparations of iron generally), we can still, as has been affirmed by

all observers, associate such an atrophy, according to its degree, or its affection upon the particular tooth, precisely with some acute disease experienced by the child during the formation of their teeth.

The remark of Hollbrouck, made in a meeting of dentists, in Wisconsin, is also of interest, that vaccination, as it always occurs during so critical a period of development of the jaws (*i. e.* tooth formation) when it reacts in severe fever, is the cause why, at a later day, the permanent teeth are affected with atrophied enamel.

The above paragraphs are short and abrupt, because I did not want to write an instructive treatise, but only intended to instigate the more acute thoughts of this or that colleague, and it will afford me much pleasure if this instigation will be followed by a result.

IS THE EXERCISE OF THE TEETH CONDUCIVE TO HEALTHY NUTRITION?

By E. D. Swain, *Chicago, Ill.*

* * * * * * * * * *

The conditions necessary for normal nutrition of tissues in the human body, we are told, are fourfold. I am obliged to add one more, however, and call them five, viz:

First. A right state of the blood, or other nutritious material.

Second. A regular and not far distant supply of such blood.

Third. A certain influence of the nervous system, not as yet fully understood.

Fourth. A normal condition of the tissue to be sustained.

Fifth. *Exercise.*

To secure the right state of the blood, of course, involves a correct condition of such functions as healthy digestion, respiration, and excretion; and to maintain a healthy condition of these functions, proper exercise is essential. As well must there exist a condition of the blood itself, which may assist the several organs in a proper performance of their functions, and at the same time preserve that something in itself, which enables it to repair itself, and maintain this right state, as the power to elect

and convey the proper nutritive materials to those tissues in need.

The nutrition from the blood and its fluid is furnished to the teeth internally and externally. Probably the internal supply is for the maintenance of the dentine and enamel, while the external supply supports alone the cementum. I make this assertion because internally we do not find the requisite tissues for bone building; that is, no periosteum which we are now taught is essential for bone formation. And although dentine and bone contain nearly the same elements, they are in different proportions; and the one cannot take the place of the other, or exist upon precisely the same nutritive material. Therefore were it possible to reverse this order of nutrition, the tooth would not be supported, but die and be cast out.

Internally, I believe the fluids conveying the nutritive material circulate as far as the inner surface of the enamel.

All who have seen a section of tooth under the microscope, must have observed the resemblance to lacunæ always present between the dentine and enamel, into which it is easy to trace many of the tubuli. These spaces, I believe, are to the enamel what the lacunæ are to the bone, and that the enamel receives by imbibition its nourishment from the fluid contained therein.

These theories are, I think, the more tenable since investigation has shown that not only the fluid of the blood, but even the corpuscles themselves pass through the coats of the blood-vessels into the surrounding parts.

That the nervous system conduces in some imperfectly understood way to the nourishment of tissues, is obvious from experiment and observation. Probably the sensitive nerves more than the motor are thus influential. This is inferred from the manifold influences of the nervous forces upon secretion. The process of secretion is so similar to that of nutrition, that what can be proved of one may with safety be inferred for the other.

Paget learned by actual experiment that the severing of the trigeminal nerve in the rabbit greatly retarded, if not entirely suspended, nutrition to the eye, nose and face. And cases are reported in which injury to this nerve in man, by accident, was followed by the eye, nose and face shriveling in a very short time. I regret that no observer has noticed, or at least reported,

the result upon the teeth in such cases. However, allowing us to reason from analogy, and knowing the teeth to sympathize strongly with these parts, and that their nervous force is derived mainly from the same source, we can readily believe that such a condition would be also destructive to them. The assistance rendered by the nerves to nutrition is probably of this character. That is, they convey sensation from the part needing repair to the brain or the power which orders, telegraphing, as it were, the kind and amount of, as well as place where the reparative material is required.

And it is through the medium of this nervous influence that I contend exercise conduces to the healthy nutrition of the teeth, that it excites the nervous forces to the cognizance of the wear and tear taking place in the teeth, as in other tissues, and the nerves in turn stimulate the flow of healthy nutritive material to the parts requiring it. We all know that under certain conditions the fluids in the teeth are capable of depositing, and do deposit lime salts, with other materials, necessary for the formation of something very like dentine, if not true dentine itself, in the effort to protect the pulp and its vessels, when, from the wearing away of the teeth they are liable to become exposed; and we know that frequently the deposit is rapid in proportion to the wearing away. I think all will acknowledge the fact that we seldom find a tooth affected with caries that apparently has the power of making this deposit, though where the necessary material for repair is present, with only power to organize inside the pulp membrane (as in calcified pulps), decay readily takes place. In my search for calcified pulps, I broke open three hundred (300) teeth, procured at the Colton Extracting Office, finding twelve calcified pulps, and each tooth containing one was badly decayed, while every tooth showing a deposit upon the walls of the pulp cavity was sound. It may be urged against this theory that a deposit does take place in decayed teeth upon their being stopped with oxychloride of zinc. I can only answer by saying that it does take place in those cases, but not until we have applied the stimulus which the oxychloride of zinc seems to afford, and which probably was essential to promote this action.

We all admit that many other tissues grow and become healthy and strong in proportion to the amount of healthy

exercise they receive. This is true of the bones, muscles, epidermis, &c.

We are taught that the phosphate of lime exists in the mucous membrane, and that its abundance is in proportion to the amount of mechanical force it is subjected to. These being acknowledged facts, why may we not conclude that the same laws governing these phenomena as in other tissues shall also hold good with regard to the teeth. They (the teeth) being, as they are, provided with the same means of nutrition, that is, blood, its fluid, and nerves—and nerves which, I think, your patients will testify, belong to the sensitive class.

Teeth without an antagonist in the mouth, we all know are liable to become diseased, or rather the parts about them are. They are, as it were, ejected, and not unfrequently lost from this cause, viz: simply because they are deprived of the necessary amount of exercise to keep them in a healthy condition. Devitalized roots also are frequently thrown out, or up, which, if provided with a crown either of gold, or with a pivot, become strong and healthy members, doing good service for years.

Frequently in the mouths of our patients do we find the teeth upon one side of the mouth firm and hard, with all the surroundings in a healthy condition, while those upon the opposite side are carious, loose, and the gums spongy; in fact, exhibiting a condition quite the opposite in every particular. By questioning, we learn that all mastication is done upon the healthy side. It will no doubt be claimed that this all arises from the fact that the friction of mastication keeps these teeth cleaned upon the healthy side. Which argument I admit, while I beg to go further and assert that mastication is exercise, and that it excites the nervous force and increases the circulation of the blood to these parts, consequently securing a better nutrition. These teeth, as well as the tissues surrounding them, are harder and better able to withstand the attacks of disease. In short, the same laws which histologists inform us govern the production of the hard mucous membrane, has exercised its force here, and will continue to do so as long as the system is able to repair disease and waste in any other tissue.

The question is often asked: Why are the first molars so subject to decay? It may be answered, because nutrition is less perfect

during the years these teeth are being formed and erupted, owing to the numerous ills to which the child is subject, and because the food is softer upon which they subsist at this age, and consequently they are insufficiently exercised. I think the most of our food is too much prepared; it is in fact already in a condition to be shoveled into the stomach, requiring no force by the teeth to prepare it for that organ. I have observed that the teeth of foreigners coming among us from those countries where the food is less prepared, have, as a rule, better teeth and less decayed, with larger and better developed jaws.

Such observations have tended to confirm in my mind the theories above advanced.

PLATINUM AMALGAM.

"This alloy, if mixed with a small quantity of mercury, sufficient only to make it adhesive under strong pressure, sets in about ten minutes, sufficiently hard to be condensed in the same manner as a gold filling. It is then sufficiently hard for mastication, and is *absolutely free from shrinkage or alteration,* retaining its color and finish in most cases for years without the slightest change. It is totally insoluble, and possesses every desirable property of a perfect plastic metallic filling.

"The time required to harden may be adjusted at will by a slight variation in the proportion of mercury used. After the amalgam has become hard, the mercury cannot be separated under a dull red heat.

"All waste should be put in the bench sweep or gold filings for refining, as it contains a large per centage of both gold and platinum.

"In 1oz., ½oz., and ⅛oz. (*Sample*) bottles 20 dollars per oz.

"Prepared and tested by Thos. Fletcher, F. C. S., 15 Bold street, Warrington."

[Having received the above advertisement by circular, and supposing that many other members of the profession have also, I have it inserted here for the purpose of remarking that I consider the gold and platinum, which is combined in this amalgam, of no positive benefit to it. Gold amalgam and platinum

amalgam have been tried, without finding any superiority by the use of these expensive metals. Experience alone can decide upon the merits of any amalgam, and a *new* one should be used with caution. As for myself, I use none of them.—CHASE.]

IOWA STATE DENTAL SOCIETY.

A very interesting and enthusiastic meeting of this Society was held at Des Moines on the 9th, 10th, and 11th of July. The essays and discussions evinced a higher grade of professional attainment than those of any previous meeting; and I think would compare favorably with that of any other State association.

A committee was appointed to confer with the agents of the Iowa State University, asking them to establish the chairs of "Institutes of Dental Science," "Operative and Surgical Dentistry," and "Mechanical Dentistry," which, in connection with the chairs of "Anatomy and Physiology," "Chemistry," and "Materia Medica," already established in the medical department, would form a college of dental surgery.

Some of the papers read at this meeting will appear in this Journal.

CHASE.

Mr. Spackler, of this city, is making very fine chisels, after patterns recommended by Dr. Arthur and others. They are very *thin*, and exceedingly hard, so that they can be used effectually in the separation of teeth instead of files, which are so much objected to by many parties. C.

Mechanical and Miscellaneous DEPARTMENT.

PROCEEDINGS OF THE THIRD ANNUAL SESSION OF THE CALIFORNIA STATE DENTAL ASSOCIATION.

Dr. S. W. Dennis, President, in his annual address, spoke in eloquent terms of the worthy efforts being made by the members of the association to place our profession, side by side, if not in advance, of the other learned professions of the age, and how the profession on the Pacific Coast had for twenty years floated about like a deserted ship; that it had been anxiously watched by some members of the profession, and was at last boarded and manned by a crew that would sail her triumphantly under easy but taut canvas, and, that if all who shipped with us do their duty, we will soon so extend our sphere of usefulness, as we are bound along on the journey of professional life, as to command the respect of those rich with intellectual culture, social and moral worth, and in fact the whole civilized world. He spoke at length of the necessity of a thorough dental education, regreting that the several dental journals which "have done more for the advancement of the profession than any other medium," were so little read and supported by dental practitioners. If all understood their duty, every important truth would find its way into said journals, and the journals would find their way into every dentist's office.

Of the Rubber Dam he said: "Too much cannot be said in praise of, or done for the inventor, Dr. S. C. Barnum, for his generous gift of it to the profession." Believed there was no dentist worthy of the name who did not owe much for his professional status to associated effort; urged the necessity of harmonious intercourse, interchange of thought and discussion; using all our talents to make our association acceptable to God, commendable to man, and subservient to the wants and necessities of the human race."

William Dutch, D. D. S., chairman of Committee on Operative Dentistry, said that properly prepared cavities should be as free from undercuts as possible; all fissures thoroughly excavated, and orifices thoroughly smoothed, to make perfect points. Soft foils were not indispensable, yet most difficult operations can be safely undertaken with cohesive foils, by the faithful operator. All would fail when used by the *unfaithful.* Of heavy foils, prefers the rolled to the beaten, urged perseverance in the application of the rubber dam, as it well repays for all time and trouble, as success is attained with it, where failure is certain without it; considered the burring engines indispensable to the operating room.

In answer to a question, Dr. Dutch said he never sacrificed any portion of the teeth that could be saved; protects weak walls by lapping the gold over them to prevent their being forced away by antagonizing teeth, or other causes.

Dr. Knowles used soft, light foils, No. 4 principally, against frail walls, to avoid the difficulties of perfect adaptation incurred by the heavy; the heavy leaving microscopic angles, creases and crevices; generally finished up with the heavy; influenced by circumstances; very seldom uses retaining pits. In contour fillings, uses thread cut wires to build around, anchoring them in the dentine; sometimes as many as three in a tooth, thus retaining fillings securely that could not be by the ordinary *pit*; always finds space to insert them in *living teeth,* between pulp and enamel, without injury to pulp, advocates smooth folding of foil.

Dr. Roberts "crimps" his foil, is not afraid of injuring it by contact with *clean* fingers. All agreed that fine points, frosted or slightly serrated, were best for adhesive gold.

Drs. Prather and Plomteaux used the broken *points,* spoken of in the March number of the Missouri Dental Journal, almost universally; believed that none who tried them would use any others.

Dr. Knowles exhibited models of a large number of difficult cases of irregularity that had been under his treatment; also the appliances used in their correction, conclusively showing that the most difficult cases can be bettered, if not entirely over-

come, by skillful treatment and perseverance; believed one of the principal causes of irregularity is that the child inherits the teeth of one parent and jaws of the other. Much injury is likely to result by too rapidly moving the teeth. When correcting irregularities, the mouth should be kept in as healthy condition as possible during the operation, by aid of such remedies as each case may demand.

Dr. Sichel read a report on dental chemistry. He said he used as a substitute for red vermillion in vulcanite the following preparation: dissolved oxide of iron in nitric acid, put in crucible, and anneal to smelting heat; cool, pulverise, and mix with the rubber.

Drs. Woodward, Bush, and Meyers, of Committee on Mechanical Dentistry, reported no important improvements; believed gold in proper hands a *good and proper base* at all times, especially in partial sets; Allen's continuous gum work secures the most correct expression and articulation, and is very desirable for entire sets.

Dr. Cool generally used vulcanite metal lined, especially all partial sets with No. 18 or 19 alluminum. Plates thus lined never gave way.

Dr. Dennis believed any material improperly manipulated would produce irritation by mechanical action; believed rubber had been injurious to the profession on account of its wholesale use by incompetent and dishonest operators.

Dr. Plomteaux did not believe in condemning any material, simply because quacks used it; would advocate the use of any material that had merit in it when properly manipulated.

Dr. C. C. Knowles had not the slightest doubt but that gold work, when properly adjusted, would answer every purpose of mechanical dentistry; believed vulcanite far superior to any other cheap base extant, and that it had been a great blessing to the world; "that it had been a curse to the profession," we may well entertain different opinions; does not believe there is a well authenticated case on record of its noxious character, or injury to the mouth, when properly cured and manipulated.

A vote of thanks was tendered Dr. Dutch for his interesting and efficient clinic, being the first on operative dentistry given before the Society.

Dr. Knox nominated Professor J. Foster Flagg, of Philadelphia, and Wm. H. Atkinson, M. D., of New York, and Dr. George Wells, of Brooklyn, N. Y., as honorary members, and they were unanimously elected.

Dr. Dutch, delegate to the American Dental Association, spoke at length of the recommendation of said body relative to formation of local societies and necessity of appropriate instruction to the profession generally. A long and interesting discussion followed on the elevation and education of the profession, and the necessity of educating the public up to the necessity of paying more attention to the subject of dentistry.

Dr. Younger read an essay on "The Causes and Treatment of Loose Teeth." He generally removed the cause of loose teeth, and treated surrounding parts with tincture iodine; did not believe in the use of acids for removing tartar; preferred fine instruments. If skillfully used will not injure the periostium.

Dr. Knowles prefers chloride of zinc to tincture of iodine; believes it more of a stimulant to the soft parts.

Dr. Dennis treats similar to Dr. Younger; has frequently reproduced the gums by said treatment.

The following officers were elected for the ensuing year:

President.—Wm. Dutch, D. D. S., of San Francisco

First Vice President.—J. J. Menefee, D. D. S., San Jose.

Second Vice President.—Dr. J. M. Myers, of Stockton.

Third Vice President.—Dr. S. M. Harris, of Grass Valley.

Corresponding Secretary.—Henry E. Knox, D. D. S., of San Francisco county.

Recording Secretary.—Dr. H. J. Plomteaux, of Wooland.

Assistant Recording Secretary.—Dr. D. G. Yates, of Centreville.

Treasurer.—C. C. Knowles, of San Francisco.

Librarian.—Dr. J. J. Birge, of San Francisco.

The subject of anæsthetics and their use was thoroughly discussed, and the following resolution adopted as the sense of the association:

Resolved, That we as a body discountenance the indiscriminate use of anasthetics for the extraction of teeth; and furthermore, that when such agents are necessary, their administration should

not be undertaken by any one not thoroughly acquainted with their influence upon the patient, and having always at hand all of the best known restorative agents.

By invitation of the Association, Dr. Crossett read a paper on Dental Literature and Education. The following resolution, *apropos* of the subject, was referred to the Committee on Dental Literature and Education, to be reported on at next annual session:

Resolved, That as a Dental Association, we will secure the columns of some public print (if it can be done at a reasonable expense), by which all members of the association may have a medium through which information may be diffused among the mass of our population within this State; all articles to be supervised by the publication committee.

On motion of Dr. Dennis, a committee of five were appointed to devise ways and means of securing a suitable testimonial to Dr. Barnum for the free gift of his valuable invention—*the rubber dam*—to the profession.

Drs. Dennis, Austin, Knowles, Meyers, and Menefee, were appointed, and, by vote, Dr. Dutch was added.

The President appointed the following standing committees for the ensuing year:

On Arrangements.—Drs. Austin, Sichel, Klein, Meyers, and Cogswell.

On Publication.—Drs. Dutch and Plomteaux (*ex-officio*), Knox, Dennis, and Bennett.

On Operative Dentistry.—Drs. Dennis, Pierson and Woodward.

On Dental Chemistry.—Drs. C. C. Knowles, Prather, and Bette.

On Dental Pathalogy and Surgery.—Drs. S. E. Knowles, Harris, Kingsbury, and Wilbert.

On Mechanical Dentistry.—Drs. Menefee, Spencer, McCowen, Bush, and Calvert.

On Dental Literature and Education.—Drs. Crossett, Cutler, Yates, Eaton, and Lundberg.

On Auditing.—Drs. Birge, Kingsbury, and Cool.

It was resolved to hold the next annual session at San Francisco, commencing on the third Tuesday in May, 1873, at 10 o'clock A. M.

Dr. Shrewsburg recommended the following formula, which he claimed would entirely paralize the nerve in a very short time, the only originality claimed being the proportion of its ingredients. In many cases, when using the several agents for destroying nerves, the cauterising gets the start of the paralyzing element, which never occurs with this preparation:

Recipe.—Arsenicum, gr. x.
Tannin, gr. xv.
Sulp. Morphia, gr. xx.
Creosote, gr. x.

PROCEEDINGS OF THE AMERICAN DENTAL ASSOCIATION.

The American Dental Association met at Niagaria Falls, August 6, 1872; President Cushing, of Chicago, in the chair. After the preliminary exercises, the report of the Committee on Physiology was called for, and the chairman not being ready to report, it was passed for the present, and a report on Pathology was read by Dr. Judd, of St. Louis. The report considered principally the etiological branch of the subject, and gave a resumé of the doctrines relating to the causation of disease, which are generally accepted by the profession at the present day. Beale's doctrines relating to the causation of contagious fevers were shown to harmonize with the doctrines of the most eminent German pathologists, though they were generally supposed to be radically different from the latter.

After discussion by Drs. Atkinson and Judd, the Association adjourned until 8 o'clock in the evening.

EVENING SESSION—TUESDAY.

Minutes read and approved.

Dr. Judd's paper on Dental Pathology was called up.

Dr. Atkinson caused a blackboard to be placed in front of the President, for the purpose of illustrating his Report on Pathology. Not having the right kind of brains to understand the contents of the paper, the writer can give no synopsis of it, and will only say that it was the extreme of Atkinsonism.

MORNING SESSION—WEDNESDAY.

Dr. Smith, of ——, asked, through the Executive Committee, to show and explain his method of producing local anæsthesia.

Dr. B—— wanted to know something of its composition, and whether it is a patented article or not.

Moved that it be referred it to a committee to examine its merits.

The Association laid the motion upon the table.

Dr. Jack spoke in an earnest manner against listening, for a moment, to a proposition to exhibit any secret therapeutic article which is used by the profession. He was astonished that a body of this character should listen to it at all. He considered it a disgrace to do so.

The Committees on Microscopy and Histology were granted further time to report.

Dr. Dickerman read a report on Dental Chemistry. He considered all decay of the teeth chemical, and that dental chemistry was a sealed book to two-thirds of the profession. He urged its importance to dentists, and ranges it with surgery, physiology, &c., and thought that a better knowledge of chemistry would do away with many operations. There are more ignorant of science than of operations. Chemistry is needed, if we expect any length of time to be successful dentists. Soda should always be used after eating lemons. Chemical changes are always going on in the mouth, and we ought to know what they are. Children even should be taught them—in the office, by papers and by books. He advocated the introduction of dental chemistry in school books.

Dr. Buckingham was called upon to speak on the subject, and said chemistry formerly was applied to dead matter alone. Now it is being tried to apply to living matter.

Prof. Summers, of the Alabama University, was invited by the society to address the meeting on chemistry, and said, cold and heat disturbs the forces which maintain the integrity of the teeth; acids combine with the salts of the teeth; alkalies do not combine, but seem to analyze the teeth; alkalies were more injurious than acids; alkalies were bad for digestion; acids are secreted in the mouth, and show that they are necessary for

neutralizing the alkalies. Nonsense to try to educate the people. People will not have their stomachs educated; will eat what they please. Know of nothing in chemistry which would help to preserve the teeth. Glycerole of thymol is painful on the teeth; unites with albumen, and makes a nice covering, but the nerve cries out, and says it ought not to be there. Nitrous oxide is the coming anæsthetic; directs its influence on the cerebro spinal system of nerves—never on the sympathetic.

Dr. Atkinson asked if nitric acid could be made in the blood from nit. ox.

No one ever died from it. Does not give its oxygen to the blood. Does not operate on the *blood*—only on the nerves—not on the gangionic system, except by *reflex* action. Chloroform acts on the nervous system, and decomposes in the blood also, and gives up its chlorine to the blood. Carbonic acid does not accumulate in the blood. The venous blood does not show more carbon in the blood. Perfect anæsthetia can be produced without any change in the blood; always pass nit. ox. through per sulph. iron and water many times. In making it, if white fumes are produced, it is not fit to be used.

A vote of thanks was passed to Prof. Summers.

Dr. McQuillen was opposed to this society being a mutual admiration society, but was in favor of this, as the Professor did not belong to this society.

Dr. Buckingham explained.

Dr. McQuillen quoted authorities, showing that anæsthetics produced its first action on the blood, and by diminishing oxygen, acted on the nerves. He experimented in this direction. Animal blood, or human, drawn under anæsthetics, was found that the blood corpuscles were not changed. Other authors had experimented with blood out of the body, and found different results. Approves of nit. ox.; is a good thing; only by bad use is it bad; kept a dog and a cat for thirty minutes, and a rabbit for over an hour, without death; thinks no case can be cited as a death from its use. Surgeons of this country and England are afraid of it. He is in favor of liquid nit. oxide Thinks it will soon be universally used by the medical profession, as it is now by the dental.

Dr. Bogue took exceptions to the Professor in some ideas regarding thymol, acids, alkaline, and dental education. He *could* educate his patients, and had. There were no filthy mouths in his practice Living body is the same as dead body in a chemical view—no vital force presiding over the operations of the body.

Dr. Atkinson. Glycerole produces pain, but not thymol. The glycerole is only a convenient mode of using it Nit. ox., and all anæsthetics produced their effects by depriving the blood of oxygen; could not be shown a case different. Pain produced in applications of therapeutic agents to pathological conditions is right. Deprivation of oxygen is the only thing that produces anæsthetia; denies the assumption of the Professor, that no one could be injured by the use of nit. ox. Nit. ox. is not a cause; it is merely an occasion.

The Committee on Therapeutics was called upon to report.

Dr. —— offered a resolution that a paper be prepared upon the origin and condition of this Association, and given to the committee who have charge of the centennial anniversary of the Declaration of Independence.

Voted that the Executive Committee appoint the committee spoken of.

The Committee on Therapeutics reported:

Some improvement has been made since last session, mostly in topical remedies.

New remedy.—Oil of carraway; *carvatral*—U. S. Dispensary; colorless viscid oil; odor like that of kreosote. It is carminative and stimulant in its action, and is best for sensative dentine. Dry the dentine before application. Sensitive dentine is often caused by fluids of the mouth. By keeping the cavity shut up, sensation is reduced, especially by oxychloride zinc, the latter is an escharotic, otherwise gutta percha would be as useful. Calcification is caused by stimulation by oxychloride.

Arsenious acid is discarded by the best dentists in this Association. Tannic acid and chloroform, mixed in a paste, and kept in the cavity for a few days, is recommended. Sulphl. morphine has been recommended as an internal remedy.

Burring engines have been found to produce less pain in excavating dentine. Oxychloride zinc in exposed pulps has met

with the greatest success in these cases, when protected by gold immediately, instead of postponing it; in young persons successful; in large pulp most successful; large proportion of healthy pulp to diseased; in exceptional cases, when there is not room for capping with gold, kill pulp at once. In pus-secreting pulps too much risk; leaves it to others whose experience is more favorable in its use. Charity must be used by them towards those who know less.

C. W. Strong has invented a mode of bleaching by the use of some apparatus It takes about fifteen minutes.

Dr. Atkinson used bottle and bent glass tube, black ox. manganese and hydrochloric acid.

Dr. Bogue's method of bleaching approved. Deprecates use of acids in removing tartar.

Dr. Trueman approved of the paper, but dissented from some things. We find always that the teeth are decayed by acid formations from foreign substances in the mouth. Fungi cause the acid condition of the mouth. Shut the cavity from the fluids of the mouth. Any kind of a filling will answer. Acid secretions are the cause of sensitive dentine. Has not had good success in capping with oxychloride of zinc, though not abandoned the practice. Uses the oxide of zinc, with kreosote next to the pulp, and then oxychloride. Bad constitution will always be against success.

Bleaching is successful almost universally; does not believe that a tooth can be bleached in fifteen minutes; must take three or four weeks; claims chloride of zinc and acetic acid as his own invention, seven or eight years ago; thinks the recommendation to use acids in cleaning teeth belongs to the dark ages of the world.

Dr. Butler opposes the use of chlorine, or any acid for bleaching teeth. Does not believe in bleaching teeth. Cuts out the discolored portion, fills the root, and leaves the cavity open, and it will bleach itself; or fill crown with oxychloride of zinc, and cut out all but a thin layer of the oxychloride, and fill with gold.

Dr. Wetherbee. Spirits of camphor works very well, indeed; tubes permeated by the solution; can't say why that is better than alcohol alone. Uses oxychloride in capping pulps. Has

good success; is surprised that Trueman has not had better success. The failure is the exception of the rule in treatment of the pulp. Cannot save pulps that have produced pus, or been disintegrated. Don't believe it possible to help our patients in these bad cases. In cleaning teeth acids are entirely unnecessary; must be injurious to the surface of the teeth. Must be culpable if we use them. Has delicate and nice instruments to clean the teeth.

Dr. Crouse. Tried experiment; left teeth with bits of tartar on them in sulphuric acid, and the tartar was not removed. Used aromatic sulphuric acid. Uses oxychloride for capping pulps, and succeeds in forty nine out of fifty cases.

Dr. G. R. Thomas. I use oxychloride for saving pulps. I protect the pulps with thin paper, wet with carbolic acid. Glycerole of Thymol gives much pain in my practice. I have abandoned it.

EVENING SESSION—WEDNESDAY.

Dr. Carroll. I like Guillois' cement better than oxychloride of zinc for capping exposed pulps. Do not know what Guillois' cement is; may be oxychloride of zinc.

Dr. Shepard advocated the use of the mouth glass in examining and filling during the whole operation, and advocates sitting while operating.

Dr. Noble approved of the mouth mirror for constant work; while operating can work as well looking in the glass as into the cavity.

Dr. Abbot advocated amalgam in filling children's teeth; teaches children to take care of their teeth. Uses kresote on pulp for two or three days. Uses gutta percha and wax in equal quantities, melted into the cavity; never uses wax or sandarach varnish. Failures in treatment of living pulps is one in seventeen; had found ossification of pulp, or new dentine; prefers Smith's oxychloride; wipes out the cavity with kreosote. Always fills front teeth from the front side; does not object to the showing of the gold; does not use rubber until ready to fill.

Dr. Crouse fills front teeth from the back side; always uses rubber dam in preparing teeth; never fills children's teeth with amalgam. No one does who is not lazy.

Dr. Abbot only uses amalgam when it seems impossible to use anything else. Thinks with Dr. Crouse, that tin is as good, if not better, than gold. Has seen fillings of tin in good condition for thirty years.

Dr. Wetherby, of Boston, in front teeth uses rubber dam, then wedge, and then thin file; then fill from under side. No person with a level head would fill from the front side.

Dr. Butler indorses tin for children's teeth; can fill with tin better than gold; takes less time; does not fill as much as formerly; cuts away more. Uses amalgam sometimes in children's teeth.

Dr. Moore showed a central incisor which had been forced from the mouth by inflammation, caused by a rubber band in the process of regulating.

THIRD DAY—EVENING SESSION.

After the transaction of other business, on motion, a ballot was taken to determine the next place of meeting, and "Put-in-Bay," on Lake Erie, was finally selected.

The election of officers then took place, when Dr. G. P. C. Hunt, of Indianapolis, was elected President; L. D. Shepard, of Boston, First Vice President; M. S. Dean, of Chicago, Recording Secretary, and as usual, Goddard, of Louisville, Ky., Treasurer.

FOURTH DAY—MORNING SESSION.

Reports were read by Dr. Thomas, of Detroit, on Etiology, and by L. D. Shepard, of Boston, on Dental Education.

The latter report favored endowed schools of dentistry connected with medical colleges, but with a distinct organization, &c.

The subject of dental education elicited considerable discussion.

Dr. C. E. Francis read a report on Operative Dentistry, which was discussed by various members, and after some other reports and the transaction of the necessary business, the Association adjourned to meet at Put-in-Bay, Ohio, on the 1st Tuesday in August, 1873. EAMES.

THE AMERICAN DENTAL ASSOCIATION.

This Association, which met on the 6th of August, at Niagara Falls, was largely attended, and it will be safe to assert that a very great proportion of the talent and enterprise of the dental profession in the United States and Canada was there represented. The meeting was characterized by a greater degree of individuality on the part of members than is usually found in bodies of this kind—a disinclination to be led by self-constituted leaders, and a disposition to think and act each one for himself, which was altogether unique. Views which were too subtle to be grasped by the common intellect, were not received as gospel truths, and statements which were not well authenticated passed at a discount.

In fact, this Association is slowly attaining an appreciation of what a scientific body should be. *Verbal reports* of standing committees were not well received, and a marked change in relation to some of the former educational doctrines of the Association was clearly manifested. Oregon, California and Canada were well represented, and the four days given to the business of the Association was found too short to give to each subject brought up that amount of attention which was desired. The attention usually accorded to speakers was creditable to the audience, which we must confess was sometimes subjected to a test of endurance which was only sustained by the exercise of unusual powers. The long session of each day, extending from 10 o'clock A. M. to 3 o'clock P. M., and which was necessitated by the lateness of the dinner hour at the principal hotels, was too much, even for those who count themselves active working men, and as a consequence the last of the session was thinly attended. The meeting was not remarkable for bringing out anything startling in the way of theory or practice, but its effect was to get a clearer appreciation of methods brought out and introduced before, but as yet imperfectly digested and understood. Some of its lessons will be long remembered, and we hope its influence will be salutary, not only upon its members present, but also upon the profession at large.

J.

SCREWS FOR SECURING GOLD FILLINGS NO NEW THING.

By Dr. E. Honsinger.

While the instruments put into the market by C. H. Mack, to facilitate putting gold screws into teeth for anchoring fillings, and patented by him, may be the result of his own brain work, the idea of securing fillings in that manner did not originate with him. I will give simply one case so secured by the writer fifteen years ago last February.

M. A. Crawford, then of Chicago, came to my office about the middle of February, 1857, with the right central incisor broken entirely across, as high up as might be, and not expose the pulp. The violence of the blow which broke it, however, had not destroyed the vitality of the tooth. He said, "Doctor, can you do anything for it?" After a little consideration, I replied that I thought with the kind of gold I was using (— A. G. Watt's crystal) I could build him a golden crown, or restore it to its former shape. Said he, "If you think you can, try. I know if any one can, you can." (He was formerly a patient of mine.) I proceeded in the following manner: First, I drilled a hole at each side of the pulp, and midway between it and the external portions of the tooth, into which I inserted two golden screws, made simply by cutting upon the wire a continuous thread, then cutting them the length desired, and with a screw head file slotting them so as to be able, with a small screw driver, to screw them into their places. After they were inserted, I slotted them from one-third to one-half the projecting length; then with a wedge-shaped instrument separated the ends, thereby giving a firm hold for the gold to be subsequently packed. I then formed a very small and shallow cavity, with sufficient undercut to start my filling; then proceeded to build down the tooth a little more than its former size and length; dressed it to match its fellow, polished and burnished, and the job was completed. Now, the above I then considered an experiment, with positive hope of success.

I saw the patient at intervals for four years. The last time in 1861. I met Mr. C—— on the street, when he took me warmly by the hand, wiped his tooth, and said, "Look at that, Doctor; that is the best job you ever did. It had not broken down in

the least. Neither did it show any signs of discoloration between the tooth and the crown so built on.

At the breaking out of the war, Mr. C. went as sutler in the army, and here I lost sight of this interesting case.

Now a thing patented so many years after it has been in use, looks, to say the least, a little suspicious, and reminds one of the J. Cumming's Patent Case.

I have spoken often and freely of this method, for I have no secrets. Who else has done this kind of work, and when ?

TAKING THE IMPRESSION BEFORE EXTRACTING THE TEETH.

JANESVILLE, Aug. 3, 1872.

Messrs. Editors Missouri Dental Journal:

I have undertaken a job for the first time that I have been entirely successful with, viz: that of taking the impression and making the artificial teeth before extracting the natural ones. I have never heard of this operation being performed before, though it may have been done and never published in any journal that has come within my knowledge.

Miss K—— was or is constantly employed in the post office, and could not think of being exposed to public gaze without any teeth, so I hit on the expediency of taking the impression, and working up the teeth so that she should not be a moment without them. The first molar, first bicuspid, and canine, on the right side, as well as the first molar on the left, were perfectly sound, and were not extracted. All the incisors, the left bicuspids and canine were badly decayed; some of them ulcerated at the roots. All the rest of the teeth were absent. I first took the impression in wax, made a cast to set up on, made a trial plate, took the articulation of the under teeth, then removed about one-eighth of an inch of wax by excavation from that portion that covered the bed of the mouth in the impression cup; filled up this excavation with plaster, so as to take a perfect impression of all the parts in plaster, upon which the plate would rest, the teeth going into the holes in the wax. From this impression a perfect cast was made to make the teeth on. Each plaster tooth to be supplied was cut off, and a hole counter sunk as far as I wished the teeth to go up in the holes. Seven

plain teeth were put on the plate, four incisors, two bicuspids and one canine. Clasps were made to pass around the two large molars. The next morning she came in, had the teeth taken out, and as soon as the blood stopped the artificial teeth were put in, fitting finely. She talks and eats without any difficulty, being only without teeth about five minutes. I think I could put up a whole upper set in the same way.

AURORA, ILL., August 14, 1872.

Missouri Dental Journal :

In haste, by reason of an early call, Dr. V—— of this city was caught in the mouth by his clothes-line, lifted from the ground by its hold upon the right superior lateral, cuspid and first bicuspid teeth, which, turning outward, though hanging by the gum, let the Doctor down flat on his back. With much good sense, he turned the teeth back, and coming into our office, we fastened them in place, and now, after five days, very little inflammation is present, and the teeth are pretty firm in place. The manner of fastening was simple. There being no teeth between these teeth and the third molar of same side, and no right sup. central (thus giving the *rope* a good hold upon the teeth), we tied the middle of a piece of gilling twine to the molar referred to, brought forward with a hard knot behind the bicuspid, wove between and around the lose teeth, a hard knot anteriorly to the lateral, and thence to the firm central, thus preventing an outward movement.

Very truly, yours,

O. WILLSON.

THE RUBBER QUESTION.

It will be impossible for us to give our readers a report upon the status of the rubber question (as discussed by the American Association) in the present number of the JOURNAL. It seemed to be the impression, however, that there was an absolute necessity for action, as other sharks are ready to pounce upon the profession with a whole bevy of patents, which will take what little Josiah leaves behind, and the profession must take some measures to protect itself from the clutches of these cormorants. We shall probably soon be able to give our readers the proposed plan of action. J.

The following from the *Dental Advertiser* shows the number of dental patents issued in the last three months. It will readily be seen by the reader that a set of sharpers are busy at work getting patents, and in many cases upon inventions that are older than the so-called inventors. Some of these patents have been in constant use by the profession generally for many years, and yet our *accommodating* patent office issues patents for them as if they were new inventions. It is time that the rascalities of this Department were shown up. J.

125,922—April 23, 1872, antedated April 13, 1872.—TOOL HANDLES.—Frederick A. Will and Julius A. Finck, San Francisco, Cal.

This invention relates to an improvement in the ordinary socket handle. The socket is sawed longitudinally in three or more places at its outer end, so as to form fingers for embracing the bit more closely, and the bottom of the socket is made of a triangular shape to prevent the bit, which is made of a corresponding shape, from turning.

Claim.—The handle, A, provided with a socket, *b*, the bottom of which is triangular, and of a V shape, and provided with the springs or fingers, *c*, substantially as and for the purposes above described.

125,979—April 23, 1872.—MODE OF ATTACHING PYROXYLINE BASE TO ARTIFICIAL TEETH.—Marcellus Newton, Boston, Mass.

By this invention the Pyroxyline or "Brockway" base is made into dental plates by using superimposed layers thereon, and the teeth attached to the plate by a backing of the same material in the solid form, instead of a powder, wet with ether, as formerly.

Claim—The mode of attaching Pyroxyline backing to teeth or blocks of teeth, viz: by softening, shaping, and puncturing the backing, and finally pressing it upon the pins of the teeth, as specified.

126,174—April 30, 1872.—IMPROVEMENT IN BASE PLATES FOR ARTIFICIAL TEETH.—Julius A. Bidwell, Toledo, O.

The soft rubber heretofore used to form a flexible palate for an artificial denture, is overlaid with a thin coating of harder rubber, to protect it from the action of the fluids of the mouth.

Claim.—A base-plate for artificial teeth in which the flexible piece extending from the central part to the rear edge of the place is coated with a harder compound of rubber to protect it from the acids of the mouth.

126,242—April 30, 1872.—IMPROVEMENT IN GOLD FOR DENTAL PURPOSES.—Richard S. Williams, New York.

The ordinary corrugated foil is formed into a roll, from which cylinders are cut.

Claim.—As an article of manufacture, the pellets, B, formed of finely indented gold foil, coiled into cylindical form, and cut as described, and for the purposes set forth.

126,517—May 7, 1872.—IMPROVEMENT IN ARTIFICIAL DENTURES. Francis B. Brown, Palmyra, N. Y.

This is a method of relieving the pressure of the plate upon the hard parts of the palatine arch, by placing upon the model successive layers of thin metal (gradually overlapping each other and conforming to the points requiring relief), before moulding the plate thereon.

Claim.—The strips, *a*, *a*2, *a*3, *b*, applied to the dental cast along the median raphe of the palatine arch, and across said arch at or near its widest part, substantially as and for the purpose specified.

126,575—May 7, 1872.—IMPROVEMENT IN APPARATUS FOR ATTACHING ARTIFICIAL TEETH TO THE PYROXYLINE BASE.—Abner E. Pursell, Indianapolis, Ind., and James A. Troutman, Seneca Falls, N. Y.

This invention consists,—1st, of a peculiarly constructed flask, for applying pressure to the pyroxyline base during the process of moulding it to the teeth and model. 2d. Of a case for holding teeth or blocks, while a backing of pyroxyline is being attached to them.

Claim.—1st. A flask for the purpose herein set forth, constructed substantially as herein described. 2d. The clamping attachment, constructed and arranged to operate substantially as and for the purposes specified. 3d. The combination of the flask and clamping attachment, when constructed and arranged to operate as and for the purposes herein described. 4th. The case R, constructed as herein described, and for the purpose specified.

126,809—May 14, 1872, antedated April 30, 1872.—IMPROVEMENT IN BASES FOR ARTIFICIAL TEETH.—Francis Hickman, Reading, Pa.

This invention consists in securing a removable flexible edge to an artificial denture by riveting over it a plate or follower of thin metal, swaged to fit the palatine arch.

Claim—The combination of the flexible rubber strip and lip, *b d*, and attaching plate, *g*, secured to the base, *a*, by screws or rivets, *e*.

127,408—June 4, 1872, antedated May 17, 1872.—IMPROVEMENT IN DENTIFRICES—Wm. H. Farnham, Sparta, Wis.

This invention is a recipe for a dentifrice to be formed into lozenges.

Claim.—The dentifrice composed of the several ingredients mixed together in or about the proportions stated, and for the purposes specified.

126,830—May 14, 1872.—IMPROVEMENT IN PREPARING GOLD FOR DENTIST'S USE.—Geo. J. Pack, New York.

Claim, 1st. The process of preparing gold for dental purposes by aggregating gold-foil while immersed in liquid, and afterward expelling the moisture from the aggregated mass by heat, substantially as set forth. 2d. The blocks or strips of porous gold so prepared and shielded by covering with adhesive gold-foil, as set forth.

127,269—May 28, 1872.—IMPROVEMENT IN DENTAL DRILLS.—William M. Reynolds, New York.

In this invention a treadle and fly wheel drives an upright shaft by means of friction gear, the motion being communicated therefrom to a flexible shaft made up of a rod and sleeve for extension, and two spiral springs. The handle of the engine is made of a triangular section externally.

Claim, 1st. The handle, *o*, with the part, *o*1, made three sided, a section of which is an equilateral triangle, through which the socket *p* turns, as set forth, when used in a dental drill, substantially as and for the purposes set forth. 2d. The treadle, *h*, and fly wheel, *c*, in combination with the friction pulley, *i*, and upright shaft, *i*1, revolving in the step, *a*4, constructed and operated as a dental drill, substantially as set forth. 4th. The combination of the handle, *o*, upright shaft, *i*1, adjustable rods, M N, and flexible joints, *l* and *l*1, constructed and operated substantially as set forth.

127,517—June 4, 1872.—IMPROVEMENT IN DENTAL DRILLS.—John J. Ross, Memphis, Tenn.

This is a drill rotated by a cord passing around a pulley, and fixed at one end to a spiral spring contained within the handle of the instrument. A to and fro rotary movement is obtained by alternately pulling the cord and allowing it to recede by the action of the spring. (The axis of the drill and pulley is at right angles to the axis of the handle.)

Claim.—The combination of the barrel, A A, spring, B B, cord, D, and wheel, C, as described, and for the purpose herein set forth.

127,656—June 4, 1872.—IMPROVEMENT IN COMPOUNDS FOR DENTAL PURPOSES.—Volney Smith, Schnectady, N. Y.

This is a base for Artificial Dentures, composed of Gun Cotton, Cotton, Shellac, Camphor, and coloring matter.

Claim.—A dental plate made of the ingredients specified and prepared substantially in the manner herein shown.

ERRATA.—In June number, page 219, eleventh line from bottom, "none" should read "some."

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] SEPTEMBER, 1872. [No. 9.

[*From the Western Lancet.*]

AN ADDRESS DELIVERED BEFORE THE ASSOCIATION OF MEDICAL EDITORS.

By DR. B. F. DAWSON.

MEMBERS OF THIS ASSOCIATION: We meet this evening to fraternize, in the most emphatic acceptation of the word; to celebrate the third anniversary of our association; to renew old friendships, and to behold once more, however changed, the faces of those we delight to see, and in whose eyes beams the light of a hearty recognization and welcome.

In accordance with the example set by my distinguished predecessors, as president of this association it devolves upon me to entertain you, if possible, by an annual address.

Much as I feel, and fully as I appreciate the honors of the office to which I was elected last year, yet I also feel that the position I at this present moment occupy is not among those professional distinctions either covetously sought after or earnestly desired. On the contrary, among the members of our profession at least, I am quite sure such a task is more frequently shunned than desired. For myself at least, I plead no exception from this possible frailty.

Leaving topics of direct interest to this association for our business meetings, I propose to engage your attention for a short time on a subject of interest to you as scholars and disciples of Æsculapius, to wit: "The Origin of Medical Science."

The obscurity which surrounds the early infancy of the art of medicine envelopes also the origin of all branches of human knowledge. All we do know is that from the earliest period of history it was practiced, and from this fact we may believe that at the dawn of the arts it had obtained a place among them. Reasoning from the general course of nature, it is evident that ancient man was subject to various influences affecting his physical health, and that therefore he must very soon have been obliged to seek for means of alleviating the pains, and curing the disorders with which he was afflicted. From this reasoning, therefore, we may safely affirm the treatment of disease bears almost as ancient date as the origin of man himself. Among many rude and savage tribes of the present day, as those of Africa, Australia, North America and Greenland, traces are found of the practice of medicine and surgery. We are told that those savages knew how to distinguish different diseases, and to apply a more or less appropriate remedy. These uncivilized tribes, therefore, may be taken by us as the picture of mankind in their original primitive condition.

Allowing that ancient man had diseases which he naturally sought to cure or alleviate, yet we must presume that the means and methods were crude, and more frequently the result of fortunate accidents than of rational investigation and study. Receiving successfully by tradition a knowlede of these discoveries, it is probable that each tribe made new additions to such knowledge, and in this manner their acquisitions would gradually increase. The art of healing may, therefore, be considered to have thus had its origin.

Later on in the history of man, when tribes became divided into communities, and communities into distinct families, it is probable that medicine took a more established form. Each family had its own traditions and particular mode of alleviating diseases, and thus successively they profited by the experience that had been collected by their predecessors. Still later, as the different arts developed their infant life, men of power and influence, who were desirous of adding dignity to wealth, and to become useful to their fellow-men, naturally cultivated each with ardor, and were far from neglecting that of medicine, which afforded them the means of frequently rendering very necessary

assistance. Among the distinguished Grecians especially, the art of healing was largely studied, and the names of Chiron, Aristacus, Theseus, Telamon, Patrocles, Ulysses and some others, we find were no less honored in Greece for their medical knowledge than for those exploits which, whether fictitious or real, have conferred a durable celebrity upon their name.

Among the writings of the ancient poets we also find conclusive proofs that they likewise applied themselves to the study of medicine, for we find them sometimes embodying in their works whatever they considered from experience to be valuable medical precepts. In such early periods, when the art of writing was but little diffused, or perhaps almost unknown, the measures and melodious rythm of poetry were extremely valuable for impressing the mass with certain truths. Orpheus and others have sung of "the beneficent art which *prolongs life, allays pain*, and by *restoring health* gives *happiness* and *pleasure*."

In the writings of Homer we find him frequently speaking of the wounds of his heroes and giving advice as to the dressing of the wounds and the action of several medical agents. He tells us that wine was applied to the wounds of the soldiers composing the army of the Greeks before Troy, and that the knife of the surgeon was frequently resorted to. From these facts, therefore, we are entitled to infer that these practices are of a date prior to the age of which he lived. Next to the poets we find the ancient priests combining the art of healing with their other instruments of power. Indeed the medical and sacredotal professions have in reality many points of resemblance. Both bring into action the same principles, *hope* and *fear;* and although the objects of these two professions are not the same in the hands of the priest as in those of the physician, their effects had *at that time*, nearly the same degree of influence in pronouncing the doctrines of both. Certain it is that medicine, like superstition, exerts upon the minds of men an influence proportional to their weakness. In short, no art penetrates further into the human heart; no profession enables its votaries more easily to obtain possession of the most important family secrets, and no species of doctrine has a stronger voice of appeal to the public credulity. It was not, therefore, surprising to find the early priesthood practicing the healing art. From this

time forward we find medicine and religion traveling hand in hand. The ancient gods were worshipped for the cures effected in their name by the priests, and which were proclaimed by them to depend upon their intercourse with the Deity. The Jewish priests appear to have been the only physicians of their nation. It was to them, we learn, that the people addressed themselves for the cure of leprosy, and it was left to them to decide upon the fate of the families and individuals who were attacked with disease. In the porch of the Temple of Jerusalem we are told that a complete formulary of remedies was exhibited. It was among the ancient Egyptians, however, that the priests carried this power to the greatest perfection. They alone became the teachers, as well as the practitioners of medicine; in fact, they constituted an exclusive learned sect. The art of medicine was taught in their temples with those mysteries of initiation which are calculated to create believers. They subjected the art to absurd regulations, as, for instance, fixing a law to determine the time for the application of remedies in *all diseases, without any discrimination:* dividing the art into as many different branches as there were diseases, or organs in the body, and finally, compelling the son to follow the profession of his father. In ancient Greece, also, medicene was cultivated in the temples, and many of their deities were supposed to possess the power of healing the sick. Apollo, Diana, Minerva and Juno, besides their prophetic powers, through their priests had assigned to them the exercise of particular branches of the art.

About this time Æsculapius acquired the ascendancy over all other deities as a god-physician, and was called the son of Apollo by the priests. Aristophanes informs us of the manner in which this deity performed his cures. Those who came to consult him were first obliged to purify themselves with water. They then deposited their offerings upon his altar and reposed upon beds placed in the middle of the temple. As soon as they fell asleep a priest clothed in the dress of Æsculapius, and accompanied by his daughters, entered and informed each of his remedy. As the god was not to be revealed but in a dreem, the patients crouched themselves upon the skins of the sacrificed rams, in order that they might procure celestial visions. Not to

feign the most profound sleep, even when awake, was an unpardonable crime. Nor was it considered less dangerous to doubt that what they either saw or heard was by heavenly inspiration. If the advice thus given did not always restore health, it was at least becoming that the patients should not contract any new disorder. In consequence of some prudent precautions in this respect, many cures must have been accomplished by the diversion which the patients enjoyed in the course of their journeys to the temples, and the not less invigorating effects of hope.

Of the numerous temples dedicated to Æsculapius, the most celebrated were those of Epidaurus, Pergamous, Cos and Cuidos. The walls and pillars of the latter temple were covered with inscriptions describing the history of diseases, and giving an account of the remedies, which had been successfully used in their cure, as advised by the deity. We are told that many people had these engraved upon metal, stone or wood, for ready reference. However imperfect and unreliable these must have been, they must nevertheless have made a valuable collection for that period. They formed indeed, as it were, the first rudiments of the art of healing, and were the first steps in the direction of that method of observation and research which has steadily augmented up to its present vast proportions, and has placed the science of medicine on a solid basis. In course of time those temples, situated at Cos and Cuidos, were considered schools for the study of medicine. Both of them flourished together for a considerable period, and between them ultimately sprang great rivalry. To this jealously may be ascribed the sudden impetus given to the medical art at that period.

Hitherto, as we have seen, the physicians of the several periods were heroes, poets and priests—more deserving the name of empirics. They observed diseases and symptoms, and tried various remedies, and more or less judged from analogy. Their theory, which was as vague as their practice, was undetermined. The ignorance of the people had made it easy to satisfy them with any form of the art, and the credulity of the same had accustomed the more enlightened class to practice deception under the guise of harmony.

But in time certain men of more exalted character began to direct their attention to the study of the arts, and among others,

to that of medicine. The revolution which these early philosophers effected in the healing art was a work of necessity. The time had arrived when it was no longer to be kept locked in the mysteries of the temples, and for placing it in the possession of others than the priesthood. From that time forward, therefore, a rational system of medicine was rapidly substituted for the existing unreliable and primitive rules, and the healing art was clothed with the same importance and dignity that graced the other branches of human knowledge. These philosophers then freed the art of medicine from the superstitious and hypocritical character it had hitherto possessed. They transformed an occult and sacerdotal doctrine into a popular science and a common art. Although these "reformers" did this much, yet they themselves committed many errors. Not satisfied with elevating medicine to the equality of other arts, they attempted also to transfer to it the imaginary laws of their system of natural philosophy, which was fertile with errors and conjecture. Thus, Pythagoras, as an example, we learn, endeavored to explain the laws of animal economy, the causes of disease and the action of medicines by the power of numbers; Democritus again referred them to the motion and position of the atoms of matter; while Heraclitus attempted to account for them by the influence of the fire of the universe. From such teachings naturally arose many of the absurd theories of which we find examples in the works of Plato, Aristotle and Plutarch, and to a slight extent in the writings of Hippocrates also.

Of all the philosophers who at that time devoted themselves to the study of medicine, Acron, of Agrigentum, in Sicily, is said to have taken the lead as the boldest and most original. Being convinced that the art of medicine should be based upon experience only, he accordingly endeavored to teach that, by studying and appreciating the different symptoms of disease by analogy, it was not difficult to find out the indications of cure. Wise as Acron was considered in his day, and enjoying as he did a distinguished reputation, yet he found it impossible to wholly overcome certain positive and dogmatical theories, and it was only long after his death that his views were accepted by a certain sect of physicians.

We have seen, then, that the philosophers of antiquity both improved and injured the science of medicine. Rescuing it from undiscerning ignorance, they, however, throw into almost as fallacious conjectures; they delivered it over from the blindness of empiricism to all the rashness of dogmatism.

In the hands of the ancient poets, we have seen that the art of healing was simply poetical sentiments; in those of the ancient priests we found it clothed with the vague and mysterious power of superstition; and, lastly, in the hands of the primitive philosophers, though its scattered and undigested materials were combined and formed into more or less regular and perfect systems, yet it still was overrun with the weeds of many crude and illogical reasonings, and could hardly claim a just right to be considered a science. Such was the condition of medicine at the period rendered famous by the appearance of Hippocrates. His ancestors, we are told, during seventeen generations, in regular succession, from father to son, had followed the profession of medicine in the island of Cos. Surrounded from infancy with all the objects of his studies; endowed by Nature with a genius which was both comprehensive, penetrating, bold and prudent, he commenced his career under the most favorable auspices, and pursued it during more than eighty years, with that degree of renown which was equally due to his talents and his character.

The date of the appearance of the "Father of Medicine," as he is called, on this terrestrial globe is fixed at four hundred and sixty years before the advent of the Saviour. Since that momentous year for the science of medicine, more than twenty-three centuries have rolled from time into eternity, and yet still the name of Hippocrates is not the less known or honored. What made him so great is well known to all of you, and what he did for the science of medicine is familiar to each one of us. I will not, therefore, weary you with its recitation. On the contrary, it is my purpose to leave those two thousand three hundred years of time with all their glory undisturbed, and ask you rather to look upon the science of medicine as it exists at present, and in the picture thus presented behold the mighty edifice of our life's profession, as it stands to-day, reflecting from its resplendent walls in golden beams the truths of a science that

has inspired some of the noblest hearts that ever beat to worship at her shrine, and bears inscribed upon her tablets names of some of the world's truly great and good men. Ancient as the science of medicine has been shown to be, yet how little does this colossal temple of to-day resemble the rough and unhewn stones of its infancy. The weak and uncertain steps with which it at first essayed to walk have given place to those stupendous strides which even in our short life we have seen it take. Rising from the chains and trammels of ignorance and superstition we behold it to-day, standing erect and firm by its sister sciences, "clothed in purple and fine linen."

Looking upon the science of medicine of to-day and recalling some of those important advances which it has made within comparatively a few years, it is not difficult to prophesy as to the future. The physician and surgeons of distinction whose names are honored among us are but the predecessors of equally brilliant men who shall strive, as these have striven, in future years to develop new truths from the inexhaustible treasures of research and study. Inexhaustible, indeed, is the well of medical science! Each new year brings us new volumes of medical lore, and gives birth to some new and brilliant genius among the disciples of Æsculapius, and yet the cry is "still they come."

And what is the future of medical science? Look back upon the imperfect sketch that I have just given you of the weakness of its infant life; see it now before you in all the grand vigor of its manhood, and your cheeks will burn with the blush of pride, and the convictions of your own hearts reply that its future will be superbly grand. Let us then, my fellow editors, feel a just pride in our calling, and by that all our powerful voice, "The press," instruct our fellow worshippers at the shrine of Æsculapius, by spreading the truths of medical science over the land, and whispering in their ears those stirring and beautiful lines of Longfellow:

"Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us,
Footprints in the sands of time.
Let us then be up and doing,
With a heart for any fate,
Still achieving, still pursuing,
Learn to labor and to wait."

[*From the Pacific Medical and Surgical Journal.*]

REVIVAL OF THE ANTIPHLOGISTIC TREATMENT.

A few years ago, when the idea of inflammation always took the lead in pathology and therapeutics, the depleting plan of treatment was in general use; and it was pushed to such extremes that a natural reaction was the result. Taking advantage of the revolutionary movement, when the pendulum was about to swing in the opposite direction, a number of sects sprang up in opposition to regular medicine, and courted the multitude by their noisy declamation against old abuses. Homeopathy, hydropathy, and other vagaries of one idea, contrived to enlist a large army of honest fools, smart knaves, and rickety philosophists, in a crusade against regular medicine, which it best suited their purpose to define as the indiscriminate and excessive use of the lancet, calomel, and tartar emetic. From this harp of three strings the schismatics succeeded in evoking a harmonious strain in opposition to regular medicine, albeit they were in mortal conflict one with another on all distinctive points. The popular mind was easily infected with the prejudice thus inspired, and physicians themselves gradually conformed to it by discarding valuable therapeutic agencies, assigning no better reason for doing so than because they had been abused by their predecessors. The vulgar outcry against bleeding and other instrumentalities of the ancient heroic practice gradually and stealthily modified the views of the profession and revolutionized the treatment of disease, so far as almost to banish from the armament of the practitioner a number of the most potent agents of the materia medica. To such an extent has this irrational proscription been carried, that there are many physicians in full practice and high standing who have never so much as witnessed the process of venesection, who never resort to topical bloodletting, or to lancing the gums in dentition, or to blisters, and who entirely discard the preparations of mercury and antimony. There appears to us no warrant for such arbitrary and unconditional proscription either in medical logic or in the general principles of science. On the contrary, it belongs to the trickery of charlatans, and its logic is that of their advertisements in the newspapers. Between

the habitual and empirical use of certain articles, and their indiscriminate prohibition, we can preceive no essential difference. There is neither reason nor science in either extreme.

But the pendulum which, half a century ago, swung from the extreme point of inflammation and depletion, appears to have passed the opposite extreme, and now begins to vibrate in a backward direction. Of late a number of able writers in England and America, as if by concert of action, have revived the claims of the discarded practice. The healing virtues of the lancet and of calomel are again presented in the light of fact and demonstration. The new generation of doctors begin to discover with something of surprise that bloodletting is not always murder, nor murcury of necessity a poison; but that there is a proper place in rational medicine for these and other potent agents, fashion, prejudice and quackery to the contrary notwithstanding. In the future, physicians will have less dread of popular clamor, whether of the vulgar herd, or of more refined people who have learned just enough of medicine to "intoxicate the brain." Without discarding Expectation, Conservatism and Whisky, they will readmit into their therapeutics Bloodletting, Mercury and Antimony.

[*From the Pacific Medical and Surgical Journal.*]

A CRITICISM ON MEDICAL JOURNALS.--THE DUTIES OF AN EDITOR.

On opening the July number of one of our Eastern journals, we find the leading article headed "Glancoma;" and the same spelling is repeated in the heading of every page, and frequently in the text. "Selero" and "Selera" occur frequently—also, "iridectory," and "suplimentary." Great injustice is done to three dignitaries of the profession by introducing them as "Hypocrates," "Paul of Ejina," and "Helmoltz." In another place the "hypocritic" treatment of disease is mentioned, and a patient has "tatanus," with "apostematous."

Now we hold that editors are inexcusable for allowing such multilated literature to go before the world. It is an act of injustice to their correspondents, to their readers, to the profession at large, and to themselves. And yet the larger number of medical journals are thus carelessly attired. True, not one

writer in twenty can, or does, furnish a manuscript that can be printed as written. It is a grievous fault — a crying sin — of literary men, that so few of them write with propriety, or even with common decency. But it is the business of an editor to stand between the writer and the reader, for the benefit of both, and for the credit of his journal and of the guild. Our profession would be thoroughly disgraced in a literary aspect, if the orthography and syntax of its periodical press were arraignded in a court of scholarly criticism. We do not refer to the lesser typographical errors which are almost inseparable from printing as commonly managed. The experience of all writers must have taught them that, of all craftsmen in the world, printers have the smallest proportion of experts in this direction. But there can be no excuse for the grosser errors, such as we have pointed out. We mantain that every manuscript which an editor admits to his columns, sould be revised and corrected if need be, so that it shall not be published with errors of orthography or syntax. If he is not a practised proof-reader, or if his engagements prevent him from reading the proof, he should make sure that this service is well done by somebody. We regard this matter as one of great magnitude in its relations to Medical Literature in America.

Operative and Surgical Department.

FILLING TEETH.

[*Read before the American Dental Convention, by request, at Boston, August 13th, 1872.*]

MR. PRESIDENT AND GENTLEMEN:

Knowing, as I do, the desire of this body for practical subjects, that can be readily demonstrated, I have chosen to speak to you of a subject which I deem highly practical, and very pregnant with usefulness to us in the operations of filling teeth. It is the use of *smooth face, oval shape packers*, and *heavy foils, With the use of the heavy lead mallet* (with a clinic), *the clinic was performed.* Operation: A superior *second bicuspid, large posterior proximal cavity, extending across the grinding surface, and including the ant. proximal surface. Nos. of foil used, 40 and 60.* The theory of welding gold has been a matter of much controversy with us, and how it could be best accomplished. I do not hesitate to declare, that it is a settled question. Welding means annihilation of space. Dating back to the early days of filling teeth with gold, in this country, we understand that the method of wedging gold in the cavity was resorted to with quite a degree of efficiency, considering the materials and the instruments used at that period. To say that gold could be packed to that state of perfection then, as now, with the improved means at our hands, would be foolish, if we consider at all the character of the the operations made now, as compared with those of the older time. It can be claimed, and truthfully, too, that the introduction of serrated points have done *much* to improve the character and quality of gold fillings. Further, it has revolutionized the whole method, and changed our operations from simple ones to those much complicated and extensive, making them, in the hands of many, very perfect, in style of finish and in point of usefulness exceedingly valuable to the

possessor. We have passed over a vast period of time in connection with the use of the methods named. Many of us are easily freshened in our memories regarding the enthusiastic manner in which the serrated points were introduced, and we can say in *truth*, that the claims made for them has been more than verified by their use.

As I have connected the use of heavy foils with the instruments I propose to bring to your notice, I will add a few words here regarding them in earlier days and now. I am aware those heavy foils have been used by the profession in a date far remote from the present, and I do not know but they have met all the desires of those by whom they have been used. I do not claim to be fully conversant with their early history, or as to the success of their use. But from what I have *not* learned regarding them, I shall undertake to prove, if not in this paper, then by a demonstration, that the great efficiency of heavy foils have not been known until quite a late date. And I will say more, that I am *sure*, from no little observation, that many of those who are in frequent use of them, are not yet aware of their value. I am also aware that not a few have undertaken their use, and have discarded them, with *severe* condemnation. All this only proves to me that for some reason they have not met with their excellence. The forms of instruments I propose to introduce to your notice are smooth face, oval shape packers, used only with a mallet, and then a heavy lead one; weight about 8 oz. As I have already given some of my claims to the profession (in the July number of the *Cosmos*), I trust it may not be amiss to repeat in substance what I have once said. Their shape gives them a point *always* in the line of the shaft, and also receives *very effectually, lateral pressure*, which *is* a decided merit in their favors. I do not hesitate to claim that gold can be *more* successfully packed in the cavity (by packed I mean adapted) than by any other form, save the ovoid shape. I have noticed the objections made here and there, but they do not at all accord with my experience. One objection I have noticed, is the slipping or sliding. This is a *decided* advantage in the hands of a careful manipulator. It promotes lateral pressure, therefore enabling the operator to most perfectly adapt the gold to the walls of the cavity. To meet this objection, the

idea has been published that roughened surfaces caused by the breaking of the steel will obviate the objection. With these the lateral pressure cannot be promoted. No *real union* can be established without first making the *rough* places *smooth*. There is many a one who is very irascible in their nature, but no roughness will ever make them smooth. The great teacher for us to look to for *real* and *forcible* instruction is found in nature. To her, analogies are very abundant. I have also noticed the claim for the smooth, flat surface packer, but the objection I would make would be, *lateral pressure* is not secured. Yet, I would prefer them to the serrated, or rough points. I do not propose here to present my views with any spirit of dogmatism, but what I say is the result of my *own* experience. Since June, 1871, I have been a faithful convert to the use of these instruments, and since October last I have felt myself master of heavy foils. With these last named, I labored under a strong conviction of their usefulness for many months, with not a little looking back, and from this experience, if from no other, I am convinced that *conviction* is not *conversion*, as many believe. I shall expe t to meet the same remarks, while in my demonstrations, as I often do. It is said by many, "Do you feel *sure* that these layers of gold will stick? I should feel afraid that in the finishing it would separate and scale off, and—*now you* don't seem to have any difficulty in your manipulations, but *I* should have no confidence were I doing it myself." Gentlemen, we *must* let loose the faculties, that they may be able to absorb the truth. Many a man is dwarfed for higher usefulness, simply because he allows rigidity of the mind, which is caused to alter, by an infiltration of prejudice, and is very hard to eradicate. Many desires have a source, but *prejudice!* Where does it have its source?

It has been said, and truly, too, that we should endeavor to make short our operations as much as possible, and secure faithful services. With these instruments, and heavy foils, this point is secured. I will not make a definite statement, but I am safe in saying in general practice fully one-half of the time is saved to the patient and operator. I am not talking loosely. I take observation and experience as my vouchers. It may be asked: "What numbers of foil are practical for general use?"

Nos. 40, 60, and 120 is my answer. There are two very important points to be noticed in their use. First, the annealing. Be sure to carry the gold to its place as hot as possible, and manipulate as readily as you can. Second. Much depends on the character of the blow given by the mallet, for securing the solidity of the foil.

As this matter will embrace the use of the mallet, it is proper, to here say what I wish to in this direction. Much has been said and written about the various kinds of mallets. My first one was red cedar, which was certainly modest. Next, lignum vitæ, then hard rubber, then tin—about three ozs.—then lead, nearly the same weight. Now lead, about 8 ozs. All these covering a period a little over ten years. The later I have used a little more than a year. I did use a steel mallet (loaned me for trial) about five minutes. I was not at all pleased, and at the request of the patient, returned to the heavy lead one. I will not attempt to here make any scientific explanation on this subject, for I might appear muddy, and very likely would be. All I can say is, I *do find more reciprocity* between the heavy lead mallet, patient, and operator, than any other. I am for the truth, and as fast as I can appropriate it, I shall do it.

A word or two about the use of the mallet. Heavy blows are not requisite; precise ones *are*. Careless, tumbling, or stiff ones are too often given. A decided, loose motion from the wrist is the one desired. It is true the use of the mallet, with heavy foils, and the instruments named in this paper, is *not* well understood. Its use requires practice and intelligence, coupled with a true desire to become proficient.

One thing more. To be a dentist in the broad sense, and to be able to meet the requirements for *faithful* service, requires more than skill. *Heart* is a much needed quality in the dental profession, as well as all the world over. A mission in this life, without it, is lost—*for good*. No one *can be* faithful until he has buried *self*. And I know of no better way by which it can be accomplished so well as by doing a great amount of the best work we can, not knowing whether we will ever receive what is called compensation—*in money*. Money is *not always* a reward, but often very far from it. As for one, I am more, and more, and more influenced with the *desire* to make

money a second consideration in dental operations. Not that I do not seem to need it; not that I do not desire it. But believing as I do, most sincerely, that "no one can serve two masters." If we love one object, can we not *better* serve it? Then, are we a brotherhood or no? These are questions for each individual to answer. If these last words are true, then, I ask, can we *contract* professional services? I shall answer, most emphatically, *no!*

CASE IN PRACTICE.

[For Students.]

Mrs. ——— has pain in left upper jaw, in the region of the molar teeth; sometimes feels the pain momentarily in the under molars of that side. This has continued for four weeks, gradually increasing, so that she has been kept awake the last two nights. *Impact* shows no tenderness of any of these teeth. Some of the teeth are filled. The only large plug is in the grinding surface of the second upper molar. Cold water relieves the pain for a short time. I concluded that there is inflammation of a *pulp*. There is no periostitis.

I shall remove the plug in the second molar. Now I find a *deep* cavity extending to the pulp chamber, a small opening into which is seen, after removing a small circular plate of gold, which had been fitted to the spot. I find for a *little distance* that a small excavator touches nothing, as it is introduced into the pulp cavity through the hole; but a little further on it touches the pulp. Evidently a portion of the pulp has been removed by absorption or disintegration. Patient states that this tooth has been plugged ten years, and has never given her trouble until within a few weeks.

I think that this tooth has had enough of "nerve capping," therefore I will destroy with arsenic.

"Why did you not cap with oxychloride of zinc?" you ask. Well, I think that this pulp is *chronically* diseased, and not a favorable case for further treatment of that kind.

Arsenic for twenty-four hours; pain for three hours; no pain in jaws since, showing that the right tooth was treated. Pulp to be removed and tooth filled.

Chase.

AMALGAMS.

In the August number of the *Missouri Dental Journal* there appeared an article reflecting upon the platinum amalgam of Mr. Thomas Fletcher, of Warrington, England.

The writer says: "I consider the gold and platinum which is combined in this amalgam of no positive benefit to it." He evidently has not made a trial of the amalgam, nor submitted it to any tests. In fact his whole information concerning it is derived from the advertisement. Even this is copied wrong, for he makes the price $20 instead of 20 shillings per ounce.

While I do not wish to be considered an advocate of amalgam fillings, yet if an honest effort is made to improve upon the very imperfect preparations now in use in this country, let us look at the matter fairly, and if anything good is the result, give the credit to whom it is due. The word amalgam serves to place all preparations with mercury under the ban. But why?

I take it the principal objections to amalgams are, first, their contraction, and, second, the discoloration of the tooth filled, consequent upon that contraction. Now can these objections be overcome? Are the various amalgams in use subjected to any tests to prove their adaptability to the purposes for which they are intended? Has testing various amalgams shown their contraction can be controlled? In the Transaction of the Odontological Society of Great Britain, for March, 1872, is a communication from Mr. C. S. Tomes, from which I take the following: An amalgam made with an alloy of 4.5 parts silver, 5.5 parts tin, when hard, contracted .33 per cent. The same proportions of silver and tin, with 1 part gold, contracted but .16 per cent., with 2 parts gold, .086 per cent., with 3 parts gold, .055 per cent., with 4 parts gold, .037 per cent. With more gold than this, the amalgam did not harden well. This table shows that the addition of gold lessens the contraction.

Further experiments have been made, many of which are recorded in the last volume of Transactions of Odontological Society of Great Britain, and in the *British Journal of Dental Science*, which prove that the amount of contraction of amalgams is diminished in proportion as the amount of mercury used is lessened, by the addition of gold and by the addition of copper.

Palladium, when made into an amalgam with mercury, hardens without contraction, does not discolor the tooth, and makes a very good filling. The difficulty in procuring it and its expense (about $40 per ounce), however, will prevent its use to any great extent.

Sullivan's amalgam (English) is an alloy of copper. While it contracts but very slightly, it becomes very black upon the surface, though it does not discolor the tooth.

The experiments of Mr. Thos. Fletcher to obtain a valuable amalgam, conducted as they have been on a scientific basis, should command respect. In a letter from him dated June 12th, he says: Judging, however, from the fact that I have tested at least two hundred different alloys, with only one really valuable result, it is becoming rather a hopeless question, so far as absolute perfection is concerned, and if the present series of alloys now under examination show no good result, I shall discontinue the matter for the present."

The platinum and gold alloy is prepared with great care, each end of the ingot is subjected to assay, and to a series of tests. Among others a plug is made in a glass tube, and subjected to a pressure of fifteen pounds to the square inch for twenty-four hours, under a colored solution, which is about as severe a test as can be had. One of these tubes accompanies each lot of alloy sold.

I have made a few fillings with this amalgam, though not enough to decide upon its value. Still I have been pleased with the results obtained, and shall use it more.

I will suggest that gentlemen interested in this matter enclose three or five dollars, United States currency, to Mr. Fletcher, as I did, and get a sample, which he will send by post, and then each can judge for himself as to its value.

T. B. Hitchcock, D.M.D.

Boston, Mass.

Hot Springs, Ark., Sept. 12, 1872.

Messrs. Editors Missouri Dental Journal:

I noticed a communication in your last *Journal*, from Dr. E. Honsinger, referring to C. H. Mack's patent "screws for securing gold fillings." The Doctor closes his article with the interro-

gatory: "Who else has done this kind of work, and when?" In the fall of 1868 I filled an upper molar for A. J. Summers, at Decatur, Ill., where two-thirds of the crown was gone. I inserted three screws, and built the tooth out to its former size with A. J. Watt's Crystal Gold. My idea originated from reading an old treatise on the use of Watt's Crystal Gold, published in the year 1855. I have the copy yet, and the diagrams favor as if they were related.

One year ago Dr. O. B. Knode, of this place, called on me with the second upper molar decayed, and worn down almost to the pulp cavity. I drilled four holes corresponding to the four angles of the tooth, about equi-distant from the pulp cavity and the outline of the tooth, and then capped or built the crown to natural size, with Watt's Gold. It looks as well and as firm as the day I performed the operation, and the Doctor feels very proud of it. It is an old thing, and like a great many other patents gotten up, is liable to "take one in," especially when older heads in the profession give it their endorsement. I have had occasion to try it but twice, probably because I had to manufacture my own screws, and that there are comparatively few cases where it can be made practicable.

Another article I noticed, that of taking the impression before extracting the teeth. I do not know that I ever heard of the operation being performed before, or at least being published in any journal. I have frequently inserted teeth immediately after extraction. Last July Mr. James G. Allen, merchant of this place, called on me, and made the inquiry if teeth could not be put in immediately. I told him it could be done, took the impression, cut from the model the four upper incisors, made the plate, and five minutes after extracting, inserted the teeth, which look perfectly natural, and answer every purpose that any other set of artificial teeth would, but they can be nothing more than temporary, and that of short duration, as the gums rapidly absorb, and the plate gets loose.

J. B. ROWLAND.

REMARKS OF EDITOR.—Taking the impression before extracting the teeth is no new thing. I have done it very many times, and still practice it. The first occasion was seven years ago,

and then it was not original with me, for some forgotten person recommended it. I am quite sure that I mentioned the operation about that time in the *Cosmos*.

CHASE.

[*From the L'Art Dentaire.*]

UPON THE EUCALYPTUS GLOBULUS, AND ITS EMPLOYMENT IN AFFECTIONS OF THE TEETH.

Translated by H. JUDD, M. D.

The *Eucalyptus globulus*, said Dr. Gimbert, of Cannes, in a pamphlet, which we recommend to our readers, is destined to make an economical revolution among us. Few trees, in reality, deserve as much attention from the friends of progress. On account of its luxuriant nature, the prodigious rapidity of its development, its gigantic proportions, the hardness and solidity of its wood, as well as on account of its medicinal qualities, the *Eucalyptus globulus* responds to a multitude of wants of the first order.

Last year M. Gubler made to the School of Medicine two communications upon the therapeutic employment of the *Eucalyptus globulus*. These communications, collected by Dr. Ernest Labbee, and reviewed by the professor, have been published in the Bulletin of Therapeutics (of the 30th of August and 15th of September, 1871).

It will be seen by this that in the Spanish provinces of Valence, Cadiz, Seville, and Cordova, where it is generally found, the *Eucalyptus Globulus* enjoys a reputation so well founded that it has taken the name of the *fever tree*, which it has borne from time immemorial in Australia. In Corsica Dr. Carlotti, of Ajacceo has reported also the benefits received from the *Eucalyptus* in the paludal fevers which would not succumb to sulphate of quinine.

M. Gubler has not had an opportunity of experimenting upon a scale sufficiently large to have determined by himself the superiority of this fibrifuge, but he has assured himself that in one case of tertian fever, of the strongest marked characteristics, one dose of eight grammes of the *Eucalyptus* powder, given each day for several days in succession in the intervals of the

attack, had caused the latter to disappear without any return of it.

There are other conditions, according to M. Gubler, in which the properties of Eucalyptus, very analagous to those of tonic balsamic, and astringent substances, can be utilized as well upon the external surface as internally.

In the treatment of wounds, the alcoholic tincture of Eucalyptus is very superior, said the professor, to camphorated spirits or to thymic acid. Besides, its excellent perfume renders it preferable to phenic acid.

But it is especially useful in muco-purulent affections of the urethra and vagina, that M. Gubler has had the greatest satisfaction in the topical use of preparations of Eucalyptus.

Injections of a decoction of leaves of this tree have advantageously modified sub-acute and chronic blenorrhagies in man, and oftener still have they ameliorated old and rebellious leucorrheas. Internally the use of preparations of the leaves of Eucalyptus, or their essence, which Mr. Cloez designates *eucabytol*, has produced for M. Gubler a truly remarkable success in pulmonary and bronchial affections with catarrhal prominence.

The results obtained are so satisfactory in acclimating the Eucalyptus in Provence, in Rausillon, in Corsica, and in Algeria, that it is to be hoped that the numerous patients who flee from the rigor of our winters will soon find in these favored regions not only a milder climate, but also an excellent remedy spread around in profusion.

After these concise indications, which we have just given, of the Eucalyptus globulus, it appears proper to note some of the preparations which may serve for clinical experimentation with the new medicine.

Mr. Gubler is of opinion that the leaves in powder of the Eucalyptus are superior to all other pharmaceutical forms, because they contain all of the active principles of tannin, resin, bitter and essential principles.

He prescribes it in powder, in intermittent and tuberculous fevers, with profound sweets, from four to sixteen grammes per day, divided into from four to eight doses, enveloped in unfermented bread, or he gives the essence. To produce immediate

stimulation, from two to four drops suffice, spread upon some sugar.

To obtain marked and lasting effects, it is better to prescribe capsules, containing fifteen centigrammes of the essence. M. Gubler has given progressively six, twelve and twenty a day in many cases.—*Journal de Medicine et Chirurgie.*

The author of the *L'Art Dentaire* continues: For some time we have studied the action of the tincture of the Eucalyptus globulus and the essence extracted from the tree, in the treatment of different affections of the mouth, especially for hardening the gums. The results obtained thus far have been very satisfactory.

PULP DEATH.

I have seen many cases of pulp death where it seemed to be spontaneous. At any rate, there had been no decay of dentos, and subsequent exposure of the pulp; neither had there been blows or anything of that sort to create periostitis. But in tracing the disease back, I have nearly always found that there had been, sometime previous, mercurialization of the system. As periostitis is often a sequence of pulp death, so I think that pulp death is sometimes the sequence of periostitis. In pulp death following mercurialization, I have always found periostitis present, and a recognition of the latter as the first unpleasant symptom observed.

If mercury causes inflammation of the pericementum, it may simultaneously produce inflammation in the endosteum and the pulp, there being a similarity, if not identity of tissue. Death of the pulp, and its consequent disintegration, adds fuel to the fire already burning, and if prompt treatment is not resorted to, tooth after tooth will be lost. In a case which I saw to day for the first time, one tooth after another had been extracted during two years, and the discharge of pus still continuing, the patient consulted my friend B., who kindly invited me to see the case. Both of the right upper bicuspids, the canine and lateral incisors had been extracted; a fistulous opening was seen in the former location of the first bicuspid and the central incisor of the same side was seen to have a dead pulp. This tooth must now be drilled;

the root canal cleansed, and injected with kreosote. This will very likely *stop* the progress of the disease.

Every one of the teeth in this case had been extracted when perfectly undecayed, but the patient could not tell more.

Of course constitutional remedies should be employed to eradicate from the system the mercury, and also put it in the highest condition of health otherwise.

CHASE.

MONTREAL.

I have had a very pleasant trip *East* this summer. Being in Montreal, I did not fail to call upon Dr. Beers of that city, a young, accomplished, and agreeable gentleman, and dentist. He is an enthusiast in his profession, is quite in its front rank, and is a hard worker. He is in a city where there is enough for him to do, if he is anxious to elevate the professional status of its practitioners. I was told that *eleven* of these met together in an office in that city to form a dental society, and *nine* of that number acknowledged that they had *never filled a tooth with gold*. My informant was present at the meeting, and states this to be the *truth*.

The *minimum* of the best operator in Montreal for gold plugs is only $2 50. Surely not much encouragement for the higher class of operations.

CHASE.

BURRING ENGINES.

There are very many members of our profession who have never *seen* a machine of this kind. Let me say to those, that they can hardly afford to do without one of some kind. There are various kinds in the market, from low to high price, so that all *purses* can be suited. I have now my third machine. All have been very useful, but the one I now use I think superior to the others. It is a "Morrison." It is simple, powerful, and noiseless. It cost $60, but I would not like to exchange it for any other that I have seen at a lower price.

CHASE.

MALLET, DAM, AND SCREW.

Among the improvements in the dental profession within the memory of twenty years, not any that occur to my mind at this moment exceed in value, to the patient or practitioner, the use of the mallet, the rubber dam, and the small gold screws. The mallet is a very valuable instrument for those who desire to excel as operators, while in the hands of some an instrument of evil, from want of proper care and judgment. To Dr. Barnum I doubt not the consciousness of having conferred so great a benefit upon others is of greater value to him than any pecuniary compensation he may ever receive from it. I hardly think I could fill approximal cavities without it; indeed, I know I could not: I might *stuff* them. Even an approximation to moisture I consider as fatal to a perfect union of the gold as though the whole mass was fathoms below the surface. Many of the cavities between the teeth, on their buccal and labial surfaces, extend below the margin of the soft tissues which envelop them. In the deepest portions of the approximal cavities their cervical walls loop down, or up, as the case may be. Caries of the teeth, like those of bone, always present rounded edges,—never, to my knowledge, forming convenient square shoulders or angles, which are so desirable. Therefore, too frequently we find the cervical wall of a cavity below the margin of the gum. Under the water, under everything. Now, how can we raise it, so to speak, and get it high and dry? After having prepared the cavity as we desire, and our cervical wall is found to be below the margin of the gum, my plan is to fill the cavity as best I can with Hill's stopping, and then put on my dam. I find where some temporary filling is inserted into the cavity that I can adjust my dam much easier,—that is, carry it below the deepest margin of the cavity without the rubber catching, and otherwise troubling me. Then I apply my ligature, and in extreme cases, where there is much dipping above or below the margin of the gum, I manage to pack cement or Hill's stopping on the outer side of my dam and the walls of the tooth (cervical), so as to insure its stability and prevent its leaking. The dam is a nuisance if it is not tight; and, if properly and carefully applied, positively indispensable if *perfect* union of the gold is

desired. With regard to the small gold screws, I must say that they are with me indispensable. The first thought that occurred to me upon seeing them was that they will save a great many exposed pulps. Possibly the reader may imagine that I am in the habit of exposing pulps. I have done such a thing, and am willing to be forgiven. A great many in the profession never committed so heinous a blunder, and of course are blameless. However, the man who does commit such a mistake as that to-day does not know much about the anatomy of the tooth, and probably cares less about it. The point I wish to make in favor of these pins is that, by their use, much of the tooth structure can be saved. And another point I beg to submit is, that teeth can be saved by their use, with live pulps, that could not be filled with gold in any other manner. As to the first, I said that much of the tooth substance can be saved, which is literally, true, as it is not necessary to cut away good strong tissue to to get a proper shaped cavity for the retention of the gold. I would not leave weak and doubtful enamel, but I would save as much of the dentine and enamel as my judgment would permit me to, and then, if I had not such a shaped cavity as I felt sure would retain my gold, I would insert from one to three, or more, of Dr. Mack's gold screws. In regard to my second assertion, that teeth can be saved by their use, with live pulps, that could not be filled with gold in any other manner, is also strictly true. A Mrs. M., a lady residing in Paris, had one tooth of the latter class that was successfully treated. She had had some three other gold fillings in the tooth, and had lost them all, and came very near losing the tooth. The case was a right superior second bicuspid, with the palatal and both approximal walls gone, even with the margin of the gum on the palatal side, leaving only the buccal wall standing. Certainly it was impossible to get a retaining point when so much of the tooth substance was gone. And we also had a live and healthy pulp to contend with. Save it we must, and save it we did; and also successfully supplied gold in place of the lost dentine and enamel. There were placed in the strongest portion of the cervical wall two small gold screws, one-eighth of an inch long, and about one-sixtieth of an inch in diameter; also one in the most reliable portion of the buccal wall. The starting or retaining point was

around the screws, which, with careful manipulation, will be found to be very easy. In this particular case the whole mass of gold is dependent upon the three screws to hold. it in position. And I am confident that they will do their duty, for I never ex-examined a filling that, to the best of my judgment, was more secure and satisfactory. Any one having any doubts about the strength of so small a screw—about the tenacity of these fine threads upon so small a piece of wire—has only to insert one, by four or five turns, into some sound dentine in an extracted tooth, and they will find their doubts disappear, and be quite willing to pin their faith to a pin, when necessity requires it. We would not be understood, by any means, to convey the idea that the above three things are the only acquisitions that our profession has made during the past few years; for we have not forgotten the engine, the wedge, and heavy foils.—W. IRVING THAYER, D.D.S., *Brooklyn, N. Y.*

THE RUBBER QUESTION.

We publish in the present number of the JOURNAL the primitive Cummings' patent, together with the first and second re-issues of the same. It will be observed that there is a somewhat different wording of the different issues, but the patent, as it stands to-day, is the last re-issue, the first issue and the first re-issue having been surrendered and *cancelled.*

It will be observed that the claim is for an improvement in artificial gums and palates, or, as we would state, plates. No claim made in the patent can, by any possible construction, be made to cover anything else but rubber, except what may be included in the words "or its equivalent," which is exceedingly indefinite. Every one can read the patent for himself, and see what its claims are.

Now, the vulcanized gutta percha, which has been in limited use in this city for some time, works easier than rubber, and makes a plate that no one can tell from rubber, except by chemical tests. It is worked just like rubber in every particular. Those who have had experience with it, think it a little stronger than rubber, and as it softens before vulcanizing much easier than rubber, it packs with more ease than the latter.

A. M. Leslie & Co. of this city have had some of this prepared, though the supply is yet small.

If the Vulcanite Company did not have a half million of dollars to intimidate the profession with, they would not claim that it covers the celluloid base: it is probable that they will also lay claim to this.

There is but one way for the dental profession hereafter to exist, and that is to contest inch by inch every foot of ground in resisting these monstrous outrages upon all right and all justice. This set of sharpers who are growing fat upon the hard-earned gains of the dental profession, must be taught a lesson, and we must combine together to fight this monstrosity, and others that will surely arise, or we are hopelessly disgraced. A set of men who will allow themselves to be placed in a situation where they are obliged to submit to the bullying insults of Josiah's agents, without making a vigorous effort to free themselves from the servitude, are unworthy of belonging to a learned profession. An organization will soon be formed for this purpose, and we hope that every man in the profession will take hold and do his part in the matter. The plan will be determined upon and promulgated soon, under the auspices of a committee which was appointed by the National Association at Niagara. Let every one be ready to respond.

J.

THE CUMMINGS' ORIGINAL PATENT.

JOHN A. CUMMINGS' *of Boston, Mass., Letters Patent, No. 43,009; dated June 7, 1864. Improvement in Artificial Gums and Plates.*

To all Persons to whom these Presents shall come:

Be it known that I, John A. Cummings, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful improvements in the manner of forming artificial palates and gums for inserting artificial teeth; and that the following description taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the

nature and principles of my said invention by which it may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plates of drawings represent my improvements. Figure 1 is a front elevation of a set of artificial teeth and plate formed by my improved method. Figure 3 is a view of the lower side of the plate and teeth. Figure 3 is a central vertical section of the same.

The method hitherto practiced of attaching artificial teeth to a metallic plate fitting to the roof of the mouth is attended with many objections and inconveniences, as the plate being hard and unyielding naturally hurts the mouth, and in some degree impedes mastication and perfect articulation, while the expense of the metal employed prevents many from availing themselves of the advantages of artificial teeth.

The present invention consists in forming the plates and gums to which the teeth are attached of rubber or some other elastic material, so indurated as to be rigid enough for the purposes of mastication and pliable enough to yield a little to the motions of the mouth, and in one piece, the teeth being embedded in the elastic material while the said material is in a soft condition, and then baked with the gums and plate so that the teeth, gums, and plate will all be connected, forming as it were, one piece.

a, *a*, *a*, in the drawings, represent the artificial teeth prepared in the usual manner. The plate and gums, *b*, *b*, are formed in one piece, and of rubber, or of rubber and the compounds commonly employed therewith, or of gutta-percha, or, in fact, of any elastic substance which can be reduced to a soft condition and then vulcanized or hardened sufficiently to answer the purpose. The rubber or other material used is first moulded to fit the shape of the mouth and the gums formed, and while soft and pliable, the teeth *a a* are embeded in the gums, and, as an additional security, fastened to the same by small pins *c c*, Figure 3. The teeth, gums and plate being thus connected are then baked until the elastic material becomes sufficiently vulcanized, when the process is completed, the plate being hard and rigid enough for the purposes of mastication, and yet by its

elastic nature yielding to the motions of the mouth while the teeth are firmly embedded and secured in the gums.

The plate and gums can be colored in any proper manner to imitate nature.

Having thus described my improvements, I shall state my claim as follows:

What I claim as my invention and desire to have secured to me by Letters Patent, is:

Forming the plate and gums in which the teeth are inserted in one piece of hard rubber or vulcanite, *i. e.*, an elastic material which can be hardened sufficiently for the purpose of mastication and retain a portion of its elasticity so as to yield a little to the motion of the mouth, as herein set forth and for the purposes specified.

JOHN A. CUMMINGS.

A. POLLOCK,
J. L. COMBS. } *Witnesses.*

FIRST RE-ISSUE.

JOHN A. CUMMINGS, *of Boston, Mass., Letters Patent, No. 43,009; dated June 7, 1864. Re-issue, No. 1,848, dated January 10, 1865. Improvement in Artificial Gums and Palates.*

To all Persons to whom these Presents shall come:

Be it known that I, John A. Cummings, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful improvements in plates for artificial teeth, and that the following description taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The method hitherto practiced of attaching artificial teeth to a metallic plate fitting to the roof of the mouth is attended with many objections and inconveniences, as the plate being hard and unyielding naturally hurts the mouth, and in some degree im-

pedes mastication and perfect articulation, while the expense of the metal employed prevents many from availing themselves of the advantages of artificial teeth.

My present invention consists in forming the plate to which the teeth and gums are attached of hard rubber, or vulcanite, so called, an elastic material possessing and retaining in use sufficient rigidity for the purpose of mastication and at the same time being pliable enough to yield a little to the motions of the mouth.

My manner of making and using said hard rubber plates is as follows: A wax or plaster impression of that part of the mouth which the plate is to fit is first taken, and from that impression a plaster cast is made which will exactly resemble that part of the mouth from which the first impression was taken. A plate of wax of the general form of the intended rubber plate is then made from this plaster cast, and around the front of this wax plate a vertical ridge of wax is fixed in about the position which the teeth are to occupy in the same manner as is generally practiced in the construction of gold plates for artificial teeth. A plaster mold is then made from this wax plate, fitting it both on the upper and under side, which plaster mold is known generally as the articulator, and is constructed so as to hold the wax plate securely and conveniently for manipulation, leaving the front edge where the teeth are to be applied exposed and accessible.

The figures of the accompanying plate of drawings represent my improvements. Figure 1 is a front elevation of a set of artificial teeth and plate formed by my improved method. Figure 2 is a view of the lower side of the plate and teeth. Figure 3 is a central vertical section of the same.

The teeth shown in the drawnings are gum teeth, so-called, that is, having porcelain gums formed in one piece with the teeth and properly colored, and they are shown, each one separate. But they may be without porcelain gums, in which case the palate and gums will be formed in one piece of hard rubber, and if gum teeth they may be formed in groups of two or more, as desired. My mode of operation is the same whether gum teeth, or teeth alone are used, or separate or in groups. The teeth are set in place in the wax plate, and adjusted to the

proper distance and fullness in the same manner as is generally practiced in setting teeth in gold plates.

In the drawings the gum teeth are made separate and marked *a a*. The wax plate and gums with the teeth adhering thereto are now set upon the original plaster cast of the corresponding part of the mouth, and plaster is poured all around up to about the lower edge (as it lies) of the wax plate; the margin or outlying surface of plaster is oiled or varnished, and plaster poured over the whole, forming a complete mold of the plate and teeth. Upon the opening of this mold, the wax is warmed and removed so as to leave the teeth adhering in the plaster mold in exactly the relative position they are to occupy in the hard rubber plate. The teeth are provided with pins, *c, c*, projecting therefrom in such manner that the rubber which is to constitute the plate will close around them and by means of them hold or secure the teeth permanently in position.

The plaster mold with the teeth adhering therein as just described, is now filled with soft rubber, a little at a time pressed in with the finger or in any other convenient way. Care is to be taken that the rubber is made to completely fit into the cavities and around the protuberances (including the pins) and is filled in to the thickness or depth desired to form the plate. I then lock the rubber plate in position by shutting the other half of the plaster mold over it to insure its retaining its exact form while warming, and then heat or bake it in an oven, or in any other suitable way. The soft rubber or gum is so inserted in the mold as to be compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, dated May 6th, A. D. 1851, for making hard rubber, and is to be subjected to sufficient heat to vulcanize or harden it, substantially as directed in that patent. It is also to be colored in imitation of the natural gum, by mixing with vermilion or other suitable coloring matter, while in the soft state. After the plate has been heated sufficiently to harden it or convert it into hard rubber or vulcanite, so-called, the mold is removed and the plate is polished ready for use.

Having thus described the method I have used for making and using hard rubber vulcanite plates, what I claim herein and desire to secure by Letters Patent is:

The plate of hard rubber vulcanite, or its equivalent, for holding artificial teeth and gums, substantially as described.

JOHN A. CUMMINGS.

JOSEPH GAVETT,
SAMUEL M. BARTON, } *Witness.*

SECOND RE-ISSUE.

JOHN A. CUMMINGS, *of Boston, Mass. Assor (through mesne Ass'ts) to the Dental Vulcanite Co. of same place. Letters Patent, No. 43,009; dated June 7, 1864. Re-issued, No. 1,848, dated January 10, 1865. Again Re-issued, No. 1,664; dated March 21, 1865. Improvement in Artificial Gums and Palates.*

To all Persons to whom these Presents shall come:

Be it known that I, John A. Cummings, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful improvements in plates for artificial teeth, and that the following description taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The method hitherto practiced of attaching artificial teeth to a metallic plate fitting to the roof of the mouth is attended with many objections and inconveniences, as the plate being hard and unyielding naturally hurts the mouth, and in some degree impedes mastication and perfect articulation, while the expense of the metal employed prevents many from availing themselves of the advantage of artificial teeth.

My present invention consists in forming the plate to which the teeth, or teeth and gums are attached, of hard rubber, or "vulcanite," so-called, an elastic material possessing and retaining in use sufficient rigidity for the purpose of mastication and at the same time being pliable enough to yield a little to the motions of the mouth.

My manner of making and using said hard rubber is as follows: A wax or plaster impression of that part of the mouth

which the plate is to fit is first taken, and from that impression a plaster cast is made which will exactly resemble that part of the mouth from which the first impression was taken. A plate of wax of the general form of the intended rubber plate is then made from this plaster cast, and around the front of this wax plate a vertical ridge of wax is fixed in about the position which the teeth are to occupy in the same manner as is generally practiced in the construction of gold plates for artificial teeth. A plaster mold is then made from this wax plate fitting it both on the upper and under side, which plaster mold is known generally as the articulator, and is constructed so as to hold the wax plate securely and conveniently for manipulation, leaving the front edge where the teeth are to be applied exposed and accessible.

The figures of the accompanying plate of drawings represent my improvements. Figure 1 is a front elevation of a set of artificial teeth and plate formed by my improved method. Figure 2 is a view of the lower side of the plate and teeth. Figure 3 is a central vertical section of the same.

The teeth shown in the drawings are gum teeth, so-called, that is, having porcelain gums formed in one piece with the teeth and properly colored, and they are shown each one separate. But they may be without porcelain gums, in which case the palate and gums will be formed in one piece of hard rubber, and if gum teeth they may be formed in groups of two or more as desired. My mode of operation is the same whether gum teeth or teeth alone are used, or separate, or in groups.

The teeth are set in place in the wax and adjusted to the proper distance and fulness in the same manner as is generally practiced in setting teeth in gold plates. In the drawing the gum teeth are all made separate and marked *a a*. The wax plate and gums with the teeth adhering thereto is now set upon the original plaster cast of the corresponding part of the mouth, and plaster is poured all around up to about the lower edge (as it lies) of the wax plate, the margin or outlying surface of the plaster is oiled or varnished, and plaster poured over the whole, forming a complete mold of the plate and teeth. Upon the opening of this mold the wax is warmed and removed so as to leave the teeth

adhering in the plaster mold in exactly the relative position they are to occupy in the hard rubber plate.

The teeth are provided with pins, *c c*, projecting therefrom, in such manner that the rubber which is to constitute the plate will close around them and by means of them hold or secure the teeth permanently in position. The plaster mold with the teeth adhering therein as just described, is now filled with soft rubber, a little at a time, pressed in with the finger or in any other convenient way, and care is taken that the rubber is made to completely fit into the cavities and around the protuberances (including the pins) and is filled in to the thickness or depth desired to form the plate. I then lock the rubber plate in position by shutting the other half, the plaster mold over it to insure its retaining its exact form while warming, and then heat or bake it in an oven or in any other suitable way. The soft rubber or gum so inserted in the mold is to be compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, dated May 6th, A. D. 1851, for making hard rubber, and is to be subjected to sufficient heat to vulcanize or harden it, substantially as directed in that patent. It is also to be colored in imitation of the natural gums by mixing it with vermillion or other suitable coloring matter while in the soft state. After the plate has been heated sufficiently to harden it or convert it into hard rubber or "vulcanite," so-called, the mold is removed and the plate is polished ready for use.

Having thus described the method I have used for making and using said hard rubber or vulcanite plates, what I claim herein and desire to secure by Letters Patent is:

The plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described.

JOHN A. CUMMINGS.

JOSEPH GAVETT,
SAMUEL M. BARTON, } *Witness.*

We are informed by a friend in New York that by a law of that State it is made a misdemeanor for a dentist to make use of the title "Doctor" without he has a proper diploma.

J.

JOURNALISTIC.

In the *British Medical Journal*, Dr. McGreevy strongly recommends hydrochloric acid in cancrum oris, applied to the ulcer with a camel-hair brush. He states that he has rarely failed to check in this way the disease at once, whilst applications of nitric acid, nitrate of silver, chloride of potassa, &c., were usually attended with no beneficial results.

The *Dental Times* for July is at hand, in which Dr. J. S. Smith, of Columbia, Pa., furnishes an article upon Dento-Neuralgia. The connection of neuralgia with disease of the dental organs is asserted, and cases reported to corroborate the statement. The sum and substance of the production is, however, found in the following: "What we need to-day is more light thrown upon the subject in the medical and dental profession."

Dr. H. Gerhart replanted a tooth, with excellent success, that had been knocked out of the mouth and kept dry for more than twenty-four hours.

James Lewis, of Mohawk, New York, writes sensibly of Celluloid base. He has had some failures and some successes thus far. Thinks the flasks should be thoroughly dried before the base is put in. He remarks: "As to the permanency of the celluloid base, I fear we cannot hope much. It is certain that the camphor does dissolve out, and when that occurs, the celluloid contracts just as it would if dried from a solution."

In the *Medical Examiner*, Dr. Edwards, of Chicago, produces statistical evidence to show what States are least afflicted with cancer and consumption. It seems that whilst twenty-five per cent. of the deaths in Massachusetts are caused by consumption, in Missouri there are only nine per cent., and in Utah six per cent., in Arkansas five, and in New Mexico only three per cent. from this cause. Upon examination of this subject, he concludes that the place best fitted for those threatened with consumption is one as far South as possible, and still far removed from the sea, and such a place is New Mexico, which statistics show to have a mortality from this cause of only three per cent.

The *Cosmos* contains an article by J. C. Hupp, M. D., recording a case of necrosis of the lower jaw, caused by the

fumes of brass. The principle evidence, however, upon which this opinion was founded, was that the man *worked* in a *brass foundry*. The necrosis did not seem to differ materially from other cases of the disease in the lower jaw, and it would hardly be safe to affirm that the fumes of brass or the fumes of zinc, thrown off during the process of making brass, causes necrosis, without a good deal more testimony than we yet have upon this subject.

Dr. Latimer discusses the question as to who may rightly claim the title of "Doctor," and thinks there is no excuse for any one assuming the title who has not had a degree conferred upon him by the proper authorities. He states that a special act of the New York Legislature exempts dentists from serving on juries, but in order to be free from jury service the commissioner of juries has decided that they must show their diplomas. This has long ago been decided by the courts of St. Louis, and any regular practitioner of dentistry has been decided to be exempt from jury service under the provisions of the law exempting physicians.

Dr. O. A. Jarvis, treating of "Proximate Decay," recommends gaining access to proximal cavities in molars from the labial surface instead of cutting down to them from the grinding surface.

In the *Pacific Medical and Surgical Journal*, Dr. Wooster reports one hundred and thirty-five cases of disease treated by the Eucalyptus Globulus, one hundred and six of which were cured and twenty-nine improved. When we find that the list of diseases comprises chills and fever, typhoid fever, nephritis, diarrheas, valvular disease of the heart, dysentery, *Gonorrhœa Syphilitica*, dropsy, &c., we are delighted to be able to chronicle such a wonderful discovery in medical science. This seems to be a real panacea, and we hope its virtues will be tried in the *collapsed* stage of a Chicago wheat corner, and it may possibly be found efficacious in a *decline* of the stock market, or an *excited condition* of Wall street. This wonderful plant is not officinal, but is probably related to the Eucalyptus Mannifera and Eucalyptus Dumosa.

Dr. O. Liebreich has discovered another Anæsthetic, which he calls "Croton chloral-hydrate." It is shown that in fatal doses

it produces paralysis of the medulla oblongata. "In a child to whom it was given complete Anæsthesia of the parts supplied by the trigememus nerve was produced, whilst the reflex irritability of the rest of the body was retained."—*Medical World.*

In the *Medical Record,* dated August 15th, is a lecture delivered by Henry D. Noyes, M. D., upon "The Relation of Diseases of the Eye with other Diseases." We refer to this lecture because it illustrates very forcibly a cause of disease which has been brought prominently to the attention of medical men by Virchow, an understanding of which involves the history of Thrombus and Embolism. As these terms are not very familiar to dental practioners, it may be well before we proceed farther to define them. Thrombus, which is derived from the Greek, is simply a *clot,* and embolism signifies the plugging of an artery, by inserting something into it. And now for the relation between them. Clots form, under certain conditions, in the veins, and sometimes a small portion of the coagulated mass of blood is detached from the end of the clot nearest the heart, and passes along with the stream of blood, enters the right heart, and is sent to the lungs through the pulmonary artery. It will be perceived that the little mass of coagulated blood has passed thus far through vessels of ample size from its first starting place till it reaches the lungs, but in its course through the pulmonary artery, which breaks up into smaller and smaller branches, the clot finally reaches a place where the arterial tubes are too small to allow of its farther passage, and it becomes arrested in its course, and blocks up the artery in which it is inserted, and this is *embolism.* But embolism is also produced in another way. In case of inflammation of the internal lining membrane of the heart, a partially organized new formation is sometimes produced upon the valves of the left heart, and if a small mass of this valvular excrescence is detached, it will, as a matter of course, pass off into the general or systemic circulation, and embolism will be the result. In the case reported in the *Record,* a man presented himself at the clinic in Berlin, with sudden blindness in one eye. Upon examination with the ophthalmoscope, it was observed that all the little arteries radiating from the optic nerve were completely void of blood. On examination of the heart, it revealed murmurs over the aortic

valves, and taking these two facts together, the diagnosis of embolism was made, and a subsequent post mortem verified the diagnosis. This same fragment of exudation might have made its way to the dental artery just as well as to the ophtmalmic, and finally to the arterea centralis retinæ, where it was arrested, shutting off all supply of blood to the retinæ, and resulting in complete loss of its functions; and if it had reached one of the small dental arteries, and become inserted into it just at the apex of the root of a central incisor, or other single fanged tooth, the result would have been death of the pulp for want of nutrition, and then would follow the train of symptoms that we are all so well acquainted with. These thoughts may sometimes assist in diagnosing obscure cases of disease of the pulp, although embolism of the dental, as of any one other artery, is undoubtedly rare.

J.

[*From the Nashville Journal of Medicine and Surgery.*]

FRACTURE OF THREE BICUSPID TEETH LONGITUDINALLY, BY CONTRECOUP.

By Paul F. Eve, M. D., *Nashville, Tennessee.*

In the twenty-seventh volume of this journal, 1870, may be found the account of two unusual fractures—one of the anterior superior spinous process of the ilium, and the other of the sternum. Attention is now called to one still more curious and infrequent.

On the 26th of July, my friend and neighbor, Dr. G. W. Currey, brought to my office Mr. Cotter, a brakeman on the Northwestern railroad, who, in attempting to check the progress of an engine at a station near the city, by putting the end of a fence-rail under the wheels, was violently struck under the chin by the other end being thrown up, by which he was rendered insensible for half an hour. The patient was in good health, and aged twenty-five years. After a few days, he came to Nashville, and was seen by Dr. C., who said to me, "Here is a singular case of fracture, and I want you to report it, for it will require witnesses to make even the profession believe it." The two left bicuspids and the first one of the right side were seen to be fissured, perpendicularly, and vertically, apparently to

the extremity of their fangs. The inner halves could be pressed inwards by the probe or nail of the finger, and were, moreover, quite loose. The man had suffered greatly, but now permitted these loose portions to be removed, which confirmed the supposition of their division down to the extremity of the roots.

The *rationale* of the accident we think was this—that as the superior dental arch overlaps somewhat the inferior, the outer cusps of the lower jaw were, by the blow, driven between those of the corresponding and antagonist in the superior, and like a wedge, had split them in two. The integuments under the chin were contused, but there was no fracture of the inferior or superior maxillary.

That the breaking of a bicuspid tooth longitudinally is of rare occurrence, may be inferred from the fact that in the recent work on Oral Diseases and Surgery, by Prof. Garretson, M.D., &c., edition of 1869, Philadelphia, no other allusion is made to the subject than to those which take place in attempts at their extraction; and Mr. John Tomes, F. R. S., Dentist to the London and Middlesex Hospitals, probably the highest English dental authority, states that the molars may be injured by the jaws being violently driven together, so that their cusps, or spear-like processes, may be broken off. He mentions a case in which he had seen the fissure extend from the crown through the greater portion of the root The only one somewhat similar to that reported here, is met with with in vol. x., *Dictionnaire de Medicine*, in thirty volumes, in which it is said that M. Duval once saw a man of sixty years who had two bicuspids of the superior maxillary fractured longitudinally, without much effort or pain. The author of the article, M. Oudet, states also that he had met with two or three like cases.

In the instance now recorded, both superior small molars on one side, and the first of the other side, were simultaneously split from their crowns to the ends of their fangs, by a violent blow suddenly received under the chin. The pulp cavities having been fully exposed, the teeth will necessarily be lost.

KINGSTON, Mo., Sept. 11, 1872.

Editors Missouri Dental Journal:

I noticed on page 316 of your last issue an article relating to the "taking of impressions before the extraction of the teeth to be inserted." Our friend from Janesville is far behind the times, or else I am a little ahead. I have made frequent use of this method for partial sets since April, 1867, and for the information of our friend at Janesville, would simply state that the first on record that has come under my notice can be found

on page 409 of the *Dental Cosmos* for 1867, (March number). I believe Dr. A. L. Stephenson, of Manchester, Indiana, originated the idea.

So far as the practice is concerned, I think in partial sets it is a good one, and with a good plaster impression the outline of gum may be traced with perfect accuracy, and a perfect fit warranted.

My first attempt was April 5th, 1867. A Mr. M——, printer, being a fashionable young man, hated the idea of going to his hotel with the four upper incisors extracted. I assured him I could remedy that. So I took the impression, cut off the ones to be inserted, and the next day he called, had his teeth extracted, and the new ones inserted immediately.

E. W. STEVENS.

WANTED—A FIRST CLASS DENTIST—To take the entire charge of the mechanical department of an office. Must be a graduate of some reputable college, and qualified to do all kinds of work pertaining to the art in the very best manner.

For particulars, address *Missouri Dental Journal*, 819 Locust Street, St. Louis ,Mo.

[*From L'Art Dentaire.*]

Translated by H. JUDD, M.D.

Dr. Godefroy reports in the *Tribune Medical* a case of a little girl born with three teeth, two superior central incisors and a superior left canine. These congenital teeth, says the author, are not rare in fœtuses. I have already seen seven examples of them before this one, but always incisors, and most generally one alone. In these cases we found two incisors each in two fœtuses, and in one an additional canine.

TAKE NOTICE.

We hope our friends who do not bind their *Journals* will do us the favor of returning to us Nos. 1, 2, 4 and 8 of the fourth volume of the *Journal*, as unexpected accessions to our subscription list have rendered it impossible to fill our orders for back numbers. We will credit the numbers sent at twenty-five cents each to those who send them.

We also shall be glad to credit any one three dollars who will send us the first volume complete. J.

RECEIPTS FOR JOURNAL.—S. M. Cummins, $2 50; C. L. Vaughn, $1 25; P. S. Caulkins, $2 50; M. B. Patterson, $3 50; O. A. Gliddea, $2 50; J. S. Latimer, $2 00; R. J. Porre, $3 00; E. K. Jaynes, $2 50; A. T. Smith, $2 50; L. W. Lyon, $2 50; James Bowman, $5 50; G. W. Gurley, $3 00.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV:] OCTOBER, 1872. [No. 10.

ADDRESS DELIVERED BY O. WILLSON, PRESIDENT OF THE ILLINOIS STATE DENTAL SOCIETY, MAY 14th, 1872.

GENTLEMEN OF THE ILLINOIS STATE DENTAL SOCIETY:—

Discussion is the average man's schoolmaster. On the forum, by the fireside, in the halls of legislation, everywhere—from the cradle to the grave, is the pro and con of intellectual life constantly agitated. Here, in the city of our birth as a society, the marvel of cities, whether in prosperity or ruin—here, after an absence of five years, are we assembled at our annual gathering, to consider questions vital to the enlightened practice of every one claiming the title of Dentist.

While it is not our wish to indulge, at this time, in vainglorious boasts of the growth of this society, its management and extended influence, or that of the profession at large; yet, epochs should from time to time be noted, as they seem to deserve; more to mark the *progress* of *dental science*, and *what that progress implies*, than from any idea that the Jericho of public opinion will tumble down at our feet, by the blowing of our own horns.

By some, it is claimed, that ours is a *lost* art—that our *discoveries* are merely *recoveries*—our inventions and improvements only a reiteration of the professional status, about the days of Pompeii.

There is no *written* record of anything *like* the facilities in those days which we of to day enjoy, for remedying disease of

the dental organs, and the evidence that is at all gleaned, to support the claim, seems quite insufficient.

We practice in a day of effulgent literary advantages, equaled by none of our predecessors.

Mark the dreadful gap in history, of dentistry without a school, society or journal. Back to the origin of printing, to the destruction of the Alexandrian library, in the year 860; away back 2000 or 2600 years ago, to the Egyptians, 1200 years before Christ, with scarcely a *dawn* of improvement. No Atkinson (or Knapp), with mallet, heavy foil and aromatic sulphuric acid. No Tomes, no Hunter, Fox, Harris, Barnum, and the solid phalanx of inventors and discoverers marshalled their hosts in full view, as during the last 30 years.

Previous to the time of the mythological Æsculapius, amulets, rubbing with African sponge, and such superstitious means were resorted to for palliating disease of the oral cavity; but from this time to the days of Celsus, the Italian doctor, (about 1200 years), the advance was made of scraping out the carious portion of the teeth with a common scalpel, and filling with gum or lead, the latter it is thought, more for the purpose of strengthening the tooth preparatory to extracting; though some claim to have seen gold in the teeth of mummies.

Up to this time dentistry did not seem to be a specialty, entirely apart from general surgery, barbering, &c., but this was the entering wedge.

Regularly endowed dental colleges, and dental societies, seem to have simultaneously started in this country, during the year 1840, from which recent time we must date the most we know about dentistry.

It is really amusing to notice some of the inborn elements of the profession in those days. It is not, says Welchens, beyond the recollection of some of our oldest practitioners, that for a man of ordinary intelligence and genteel address, to enter a dental office, would usually produce considerable commotion. There would be as much nervous perturbation and smiting together of knees upon the part of the operator as that of the patient. The latter would quake and tremble for fear of the jaw-breaking operation of extracting a tooth; whilst the former would tremble and shake lest the latter would steal the profes-

sion. There was thus any amount of jerking, dodging, and rapid nervous concealment of instruments and appliances, lest quacks should spring up, and by their *bungling work*, cheat the people out of their money and teeth.

They also exercised a commendable solicitude, not only for the protection of their patients against *bad work*, but exorbitant *charges* also; and lest the dear people should in some way be cheated, would warrant their work, or give it out on trial, and emulate each other in establishing starvation prices—some of which customs have followed the profession to the present time.

In 1820, there were in the United States, 100 dentists. Now we have not less than 10,000, with an average net annual income each of $1,500. We mention this last because of some ridiculous paragraphs that circulate in the newspapers about the fabulous profits of dentistry—correspondents forgetting that the first half of our professional life is generally profitless, and our term of *full* practice *very* short, because the eyesight and spine fail early.

Notice the account of M. C. Sim, in the last "Cosmos":

"Paid preceptor $100. Cost of living 2 years, $1,000. College course expenses, $1,000. Time for 4 years, $2,000. Outfit, $1,000. Total, $5,100, and just ready to begin the practice of dentistry. My capital ought to bring 10 per cent., and my time $1,500=$2,000, and I earn only $1,000 working hard, and yet my prices are considered high." A comment calculated to keep talented men out of the profession. This is not an overdrawn picture. One item only can we see in this statement that might be made less in some localities, and that is the $1,000 account for an outfit for office; but in other localities it would be double this amount.

Our colleges and schools number a dozen, and we support about half as many journals; while dental societies are springing into existence broadcast, some States, as New York, are even districted for this purpose, that no dentist *need* be out of their reach—an example by which we of Illinois may profit.

In noting the progress of dental science, it seems to us not unprofitable at this time, to enquire what means this rapid growth of our profession? *Demand*, is the brief and indirect, but not satisfactory answer. Can it be by reason of the large

increase of population? Do people have their attention especi ally directed to the diseases of the mouth? Are the ravages of decay upon the teeth on an increase, and we unable to retard them? Or is this demand by reason of all these causes combined? While dental progress is ever on tiptoe for the better way to success in saving the natural teeth or supplying their places, and while that progress during the last decade has been such that observing dentists tremble at times with anxiety at the possible attainments in the future for the benefit of mankind, yet this demand for more good dentists is not because we of the present age are not in some measure successful, for if we were not, dentistry, ere this, would have fallen into disrepute. And right here, allow us the digression to say, that no competitor is by you so much to be feared, as the unskillful operator. If one disgraces the profession by questionable habits, he is the greatest sufferer; but if unskillful operations emanate from his hands, either knowingly or unwittingly, then he "robs you indeed," for he leads his patients and their friends to the dreadful impression that DENTISTRY is a failure, instead of the *dentist* who misled them. But the honest, *skillful* competitor impresses the fact, that dentistry is invaluable to the human family—the impression is contagious, scores are led to the light, you gain as many patients as you lose, for he cannot serve them all, and *jealousy* goes begging for a cause.

While in ours as in all callings, there is a large class who are incompetent, others that are indifferent, yet there are more who are efficient and in earnest, and who are appreciated by the increasing intelligence of their patients. Thanks to those who rise above the shortsightedness that would lead them to be silent upon the very subject they are called upon by every humane consideration to promulgate information, to-wit: to guard the health of the organs entrusted to their care.

What a weight of exultant suggestion in that word health, and what a tinge of shame and painful meaning in that other word, disease—shame, for directly or indirectly it is the result of transgressing beneficent laws. We believe, however, that these transgressions are oftener through ignorance than design; for what will a man not give in exchange for health; and the physician or dentist, who does not, so far as in him lies, help his patients

to avoid disease, is recreant to his title and duty as a teacher.

No profession, perhaps, in proportion to its numbers and intelligence, contributes more largely to health, than does ours, because the arena of its *labors* possesses the *widest possible range* of sympathy with the rest of the body; nevertheless, this demand cannot be by reason of the great number of intelligent dentists, diffusing this knowledge among the people. Although all knowledge does not originate in colleges (though in some instances it does and remains there), to our shame be it remembered, that not more than one-fifth of our profession in active practice in this country are graduates of dental colleges, and there are no dental colleges elsewhere, (that we know of.) The medical profession, count, say 75,000 members, of whom nine-tenths possess diplomas from respectable medical schools. So long as this condition of things exists, we can hardly look for the cause of the demand in this direction. If it were because of the rapid increase of the tooth prizing population, then the ratio in numbers, of dentists and people, would keep more even pace—a conclusion not warranted by our own observation. If, then, the rapid growth of our specialty cannot be attributed solely to any one of the causes mentioned, all may, more or less, contribute, but especially the increased disturbed equipollence of the fluids of the mouth, and the want of normal formation, and resisting power, on the part of the teeth themselves.

A consideration of the causes suggested by this latter condition leads into remote and exceedingly abstruse fields of research, perhaps more important than all, yet, when we contemplate the present condition of enlightened society, its tastes and hurry, the mind is at all times bewildered and the hands paralyzed.

It is possible, however, that in the progress of dental science, remedy receives more attention than the cause which makes it necessary. Certainly, the mechanical remedy has taken precedence, because it has seemed next to impossible to do better—upon which the question may well be raised, whether this is progress in its highest state?

But while none feel like disparaging the wonderful attainments of the mechanical remedy, or retarding its further progress, *all* perhaps, more and more, feel the necessity of first re-

moving the *cause* of disease; you have done much, every way, you can and do arrest dental caries, and some, already, having passed the abatis, are actually storming the citadel of disease; so far, as to say, that *no tooth should ever be extracted.*

Artificial teeth vie with the natural, for beauty and durability. You have given to the world the practical use of general anæsthetics, and if the dental profession had done nothing more, it would deserve, and will enjoy, the perpetual gratitude of humanity.

But the ocean of scientific possibilties is yet before us, and the story of these colleges, journals and societies, is but introduced. The 1st, a foundation stone; the 2d, a column; the 3d, the crowning finish; ever changing, ultimately better than at first; its salutary reforms, often reaching far down into the old structure of professional practice, until dome and turret, wall and foundation, are wrought anew, revolutionizing old theories and methods, the better enabling the dentist to respond to the just demands of his patients, for the highest skill of the profession. To ignore them, is to turn back the hands on the dial of dental progress, and be distanced in the race for success. The associate reasoning of many as a general proposition, is far more rapid in reaching practical conclusions, than isolated effort; so rare is the faculty of concentrating the mind upon the matter in hand, to the exclusion of all *other* things. To commence with a theory, to think it out to its legitimate results, to reduce those results to a concrete form, and if it be in natural science, to proceed to experiment and practice, without diverging in any direction from the purpose, is possible to but few men.

The wool grower, the manufacturer, engineer, agriculturist, physician, scientist, all find *association* valuable in encouraging emulation, increasing resources, and raising the standard of intelligence, among their craft or profession. Whatever adds to a person's skill, increases his *capital,* upon which insurance is unnecessary.

Our societies have this peculiar advantage, that while dentistry is no less a science, it is an art, of which in comparing notes with each other, at these meetings, we can make *practical demonstrations* on the spot, thus reducing theory to practice. We owe them much, because they have largely helped us to make

the operation of saving the natural teeth less *dreadful* and more *certain*. Who among us to-day, can number the benefits in theory, ethics or *demonstration*, derived from mingling in these societies. Who has not felt his blood tingle at witnessing in our clinics, a mortifying difficulty surmounted, or heard a new suggestion, alike valuable to dentist and patient.

Colleges, always, for beginners and the few practitioners who will attend them. The journals must be *often* consulted, if we would maintain effective practice. The enacting of a law, making it obligatory upon all to obtain from competent authority a certificate of ability to practice, are all *indispensable*, but to the dental society may all look for the exhibition of the *new*, and for that sifting ordeal of discussion, giving to each theory its due weight and place; to be verified in practice. It is a highway of improvement, open to all, and should be within the reach of all.

This society numbers at the present time, 117 members, of whom, about 75 are pretty thoroughly aroused to a sense of its importance, as is shown by their record.

One year ago, President BLACK said of it, that he had enjoyed the honor of presiding over the largest local dental society in the *world*.

Although there may be some larger, such as the Central German Society, (last meeting at Berlin), yet this is a fact worthy of commemoration, and the attention of the general public, who have an interest in this matter.

Inspiring idea; when the honest, careworn dentist, with his daily routine of difficult tasks, with which, often, he is unable to contend satisfactorily to himself or patient, and for the want, it may be, of a few simple ideas, constantly being thrown out at these meetings; when the itinerant, with carpet-bag in one hand and chest of tools in the other, wandering from victim to victim; when the charlatan, with flouting sign, magic wares, and boasts of prowess won in many a tussle with firmly set teeth, and hard mouths fitted to a nicety with the scapegoat, *Josiah's* rubber, all cheaper than the cheapest; when these and their *ilk* shall all have been gathered within the fold of some good Dental Society, intent upon the greatest possible usefulness, with faces set like *steel* against the *dishonorable*, then shall we see fewer

artificial teeth, and more of the natural ones, then shall we see unfurled here, a standard of dental practice, that shall be the admiration of *Americans*, as it is now of the people of the old world; and a law regulating it easily *enforced*. Then, through the goodness of Him who keeps the record of all records, may we reasonably expect that the epoch to be recorded of Dental Progress for the year 1900, will be as much superior to that of to-day, as ours is to that of thirty years ago.

[*From the Medical Times.*]

Dr. JOHN S. PARRY, in a clinical lecture in the Philadelphia Hospital, said:

While I have this patient in the room, I desire to direct your attention to another symptom of inherited syphilis. It is one which has attracted a good deal of attention recently. If you inspect this boy's mouth, you find that the incisor teeth are imperfectly developed, and that their free extremities are notched, and smaller than the bases of the teeth. To Mr. Hutchinson is due the credit of pointing out the significance of this physical sign. Now, these are not typical examples of Hutchinson's teeth, which, when perfect, are smaller, more notched, and have more contracted crowns than these have. You see, too, that the adjoining teeth of the upper, and the middle ones of the lower jaw, present the same peculiarities in a slight degree; but you must remember that it is not among these that you are to seek for these alterations. Mr. Hutchinson has insisted upon the fact that the permanent central incisors of the upper jaw are the ones which are valuable for diagnosis, and you must further remember that he attaches no importance whatever to the various other irregularities in the position and shape of the teeth, which so often occur. The peculiarities to which I have alluded are important, viz.: First, instead of the free edge of the crown of the tooth being the broader, as it is normally, the widest portion is next the gum. Second, the free margin is notched or crescentic. These teeth are rarely present in more than one of the same family of children, and this is usually the one first born with congenital syphilis.

This symptom is wanting in several of the patients who have been before you. In this one (Case V.), M. W., the teeth are

by no means perfect, but the alterations are not characteristic, —only sufficient to arouse suspicion of congenital syphilis. In Case II., E. H., the teeth are likewise imperfect.

While in Case IV., P. K., they are large and well developed, his sister (Case III.) has not yet cast her milk-teeth. From what I show you this morning, you see that there is no uniformity in the presence of Hutchinson's teeth; and, to state briefly my own convictions in regard to the matter, I would say that, so far as my present experience shows, these dental changes, when they are present, are absolutely pathognomonic of congenital syphilis, but that they are often absent. It is another element, which will aid you in diagnosis, but which, like all other prominent symptoms of disease, is sometimes unavailable, because it is not present. This last fact is easily accounted for if Mr. Hutchinson's view of its causation is correct. He believes it to be due to inflammation of the alveolar process of the jaw, and, just as it is with iritis, keratitis, and various other conditions, the disease may run its course without the inflammation being developed.

Before dismissing the consideration of the symptoms of congenital syphilis, I wish to impress upon your minds the fact that the tertiary lesions, of which you have seen such striking examples, are by no means common. It is exceedingly rare for bone-disease to occur during infancy. I have only once met with it in a child under two years old; it was in a boy of about fifteen months.

When Diday published his work upon infantile syphilis (New. Syd. Soc. ed., London, 1859), he stated that there were not upon record more than half a dozen authenticated cases of syphilitic bone disease in infants. Mr. Hutchinson relates another (*loc. citat.*, p. 185).

There is a question connected with this disease which is very interesting, and at the same time very important in its practical bearings. The first patient whom I showed you undoubtedly inherited syphilis from her mother. The same is true of two others; while the histories of the remainder are indefinite upon this point. In none have we any direct account of the father having transmitted the disease. This in hospital practice is the ordinary history; but you must not accept this as conclusive,

for it must be manifest to you that we have to contend with many difficulties in obtaining a correct account of the origin and progress of disease in many of our little patients. Still, I am inclined to believe that the influence of the two parents in the transmission of the affection differs, and I am convinced, from the diverse statements of authors upon this point, that the subject demands reinvestigation. For example, Mr. Hutchinson (*loc. citat.* p. 208) holds that a child will inherit syphilis in as severe a form from the father as from the mother, and I believe that I am not misstating the truth when I say that this is the opinion of most other authorities. On the other hand, Professor Boeck (*American Journal of Syphilography and Dermatology*, Jan. 1870, p. 16) states that the disease is rarely, and Mr. Cullerier (*Mem. de la Societe de Chirurgie*, tome iv., and *Archives Generales de Med.*, Sept. 1854) believes that it is never, transmitted from the father to the child. A recent and very able writer on this subject, Mr. Morgan, of Dublin (Contagious Diseases, etc., 12mo, London, 1872), thinks that the influence of the father has been much exaggerated.

I have for some time availed myself of every opportunity to try to obtain information upon this subject, and, while I may subsequently have to modify my opinions in regard to it, I cannot but believe that the mother is much more likely than the father to transmit syphilis to the children, and that, as Mr. Morgan says, the influence of the father has been exaggerated. On the other hand, I do not want you to understand me as saying, with M. Cullerier, that syphilis cannot be inherited from the father. I cannot at present commit myself to any such doctrine; for I have seen more than one sad instance in which men *seem* to have begotten syphilitic children.

It is important that you should inform yourselves thoroughly upon this subject, for gentlemen who have been relieved of secondary symptoms will hereafter consult you in regard to the propriety of marriage. Every physician with any experience can point to numerous examples of this kind. It becomes you, therefore, to be able to give a reliable opinion in regard to it; and I beg you, I beseech you, gentlemen, to remember that when a man has once had constitutional syphilis, you cannot in the present state of our knowledge say positively that he will not

procreate a diseased child, no matter if he seems to have fully recovered. You may feel assured that he probably will not, and, more, you may be certain that the probabilities are reduced to a minimum, but, as we now understand these matters, you are not justified in giving a positive opinion in regard to this subject. If a man has once had constitutional syphilis, we do not doubt that under certain circumstances the poison may be eradicated so far as to prevent his begetting a diseased child; but we have as yet no reliable means of judging when this is the case.

If your opinion be asked upon this important question, it is your duty to give it clearly and truthfully, without regard to the feelings of your patient. It is your duty to yourselves, to your interrogator, and to his prospective children. But when you have told him all this, you have only performed a portion of your work. You have seen only one side of the dark picture. This is a cloud which has no silver lining. Not only is a man who is affected with constitutional syphilis to be told that he may transmit the disease to his children, but he is likewise to be informed that his wife may contract it from him, or from the child in her womb, and that he may in the future have to bear the terrible trial of seeing her suffer from secondary and tertiary syphilis.

I know that there is not one of you who will not shrink from such a trying position as this is. With a human being before you in whose heart burn the same passions, the same loves and hates, that move you, you will feel tempted to put the case in the most favorable light. But, gentlemen, tell the simple truth, remembering the delicacy of your position and the dignity of your calling,—remembering that in your decision are involved the life and comfort of unborn children, the health and happiness of a woman who is about to give her heart's best treasures into another's keeping.

The study of the etiology, and the laws which govern the transmission, of hereditary syphilis is one of the most interesting and important subjects in connection with the disease. Its elucidation, however, is attended with many difficulties. These are increased by the existing disagreements among surgeons and physicians in regard to the acquired affection. This varies

much in different cases, both in severity and the order of succession of symptoms. The severity and type of the disease in the child are no doubt influenced by these circumstances in the parent. They are, we have every reason to believe, as potently influenced by the time which has elapsed after the infection of the parents, or by the treatment to which they have been submitted. Where so many elements enter into the consideration of a question, and where their proper appreciation depends so much upon the judgment of the observer, the subject cannot but be surrounded with many difficulties. These are increased, too, by the moral and social peculiarities of the case. Though the disease has set its stigma upon either the parent or the child, the former will often hesitate a long time before acknowledging the truth in regard to it. A man or woman who would scorn to tell an untruth in regard to anything else will persist in the most unblushing falsehoods in relation to any sexual disorders. And again, the physician, when he sees the first evidences of syphilis in the child, may sometimes hesitate about making inquiries about its origin, for so marvellously perfect is the assumption of ignorance and innocence in these cases that if he had not known the parties before, he might hesitate in questioning either parent, for fear of creating domestic difficulty. If any of you ever have such doubts as these, if the surroundings of your patient are such that you have misgivings as to which may be the guilty party, do you quietly bide your time, and satisfy yourselves in the interval with properly treating your patient. The chances are that in a little time a troubled conscience will bring one of the parents to you with some unaccountable story, and it is ten to one that this will be the father.

Operative and Surgical Department.

[*From the Dental Cosmos.*]

DENTAL ANOMALIES.

BY GEO. T. BARKER, D. D. S.

The following cases, with their methods of treatment, are detailed because they have presented certain distinctive peculiarities, either in their diseased manifestation or treatment, which seemed to indicate them as of special interest.

TRISMUS.

Mr. W., apparently a strong, healthy man of forty; occupation a hospital nurse. The jaws had been closed tightly for ten days, fluids having been introduced into the mouth with difficulty, by passing between the teeth, which were large and strong, all being present. Externally there was presented a hard tumor, extending from the angle of the jaw on the left side to the median line and the symphysis, forming a mass which interfered with respiration to some extent, as well as with deglutition. He was emaciated and feverish, but had suffered no pain either in his face or teeth before the swelling and subsequent trismus occurred. Careful examination revealed no fluctuating "point," and rigid questioning only elicited the fact that the left lower wisdom-tooth had been badly decayed for several years, but to his knowledge had never had alveolar abscess.

Diagnosis.—That this was a simple case of alveolar abscess, the pus of which had burrowed between the mylohyoideus and glossal muscles, interfering with the action of the digastricus, as indeed with all the muscles of the tongue and chin, and by its pressure on nerve filaments, and presence, arrested nutritive action, by interference with circulation developing as a consequence trismus, with its attendant evils; the same cause, viz., pressure of pus on the larynx and its nerve filaments, accounting for the difficulty of respiration and deglutition.

Treatment.—Placed the patient fully under the influence of ether, opened the mouth *without difficulty*, extracted by means of Physic forceps the left lower wisdom-tooth. The extraction was followed by the evacuation of a large quantity of pus, which for horrible odor exceeded anything I had ever smelled in my professional life. The cure was immediate, or nearly so; effusions of lymph had taken place to some extent into the joints and surrounding muscular tissues, which had doubtless become partially or completely organized, but in a few days this was absorbed, and he could use his jaws as well as ever.

Reference to this case is especially made, as I had been but a few weeks previous called upon to give my judgment, with several other professional brethren, as to the accountability of a young dental practitioner, who was *said* to have caused the death of a young man by filling a tooth, causing subsequent abscess of the jaw and trismus. The facts as presented to us were nearly similar to those detailed in my case of trismus, except that a regular medical practitioner had, for I think ten days, attended and treated him for *bronchitis*, considering that that named disease was the cause of the trismus. As the dentist had not seen the patient after his tooth had been filled, and it appearing that it had not been improperly performed, it was considered that the mistake or *error* did not occur with him. A post-mortem examination revealed the fact that the patient had died most probably from apnœa, caused by pressure of the contained pus in the abscess on the larynx and its nerve filaments. If the tooth at any time during the time of continuance of the trismus had been extracted, his life would doubtless have been saved.

Abscess from Tartar.

Mrs. C., a healthy, robust Cuban lady, of middle age, presented for treatment; on examining her mouth, found teeth all present, and *all* comparatively sound; the only evidences of decay were slight discolored lines, on grinding surface of lower molars. The right central incisor (superior) was very loose, and could have been easily lifted from its socket by the fingers. Careful examination revealed on the *posterior* surfaces of all the teeth, at the junction of the tooth with the gum, a thin line of very hard, black tartar, a kind that is seen occasionally in the mouths of

smokers (and I have reason to think this lady had indulged in the Cuban habit of smoking cigarettes); and which is also very difficult to remove, requiring the sharpest scalers, and indomitable patience and perseverance. There was no evidence of this tartar on the anterior surfaces of any of the teeth except the right superior central incisor; here the root anteriorly was encrusted to its apex with tartar; there was no disturbance of pulp, that being healthy; the anterior alveolar plate was entirely absent, the tooth being simply covered by a loose, flabby pocket of gum tissue, in a state of chronic inflammation, constantly discharging ill-conditioned sanious pus, while vessels of this gum tissue were congested and enlarged.

Diagnosis.—Abscess arising from tartar, which by its irritating presence had caused absorption of the alveolar plate, and was the principal cause of the continuance of the effusion of a purulent secretion, as well as the attendant congestion and inflammation.

Treatment.—Removed the tartar from posterior surfaces completely with scalers, and from the root of right central anteriorly, as perfectly as possible, with a delicate excavator, then introduced by means of thin piece of wood some aromatic sulphuric acid. The action of this agent was two-fold: it destroyed any remaining portions of tartar by uniting with its chemical elements, and also acted as an astringent to the inner surface of the flabby pocket of gum tissue. After a short time, a saturated solution of bicarbonate of soda was injected to neutralize any free acid present. The pocket was then scarified internally with a very delicate lance, so as to simply cause slight hemorrhage; my object being to change if possible the character of the inflammatory action—getting rid *first* of the irritating cause; *second,* obtaining effusion of, and subsequent organization of, plastic lymph, or formative material, which under favorable circumstances would, I considered, restore the parts to their normal condition. After the bleeding from the scarification had ceased, the pocket was dressed, each day using one of the following agents: mild solution of *wood* creosote, wine of opium, or glycerole of thymol; also injecting occasionally a solution of hyposulphite of soda, ten grains to the fluid ounce of water, Dr. James Lewis' suggestion.

Externally, the flabby gum was treated as follows:

Superficial scarification was here resorted to, in order to stimulate the congested vessels, and to promote healthy nutritive action. After bleeding had ceased, the parts were thoroughly dried with bibulous paper, and were then painted over with collodion, my object being by this last procedure to induce contraction of the gum structure, by means of the contractile tendency of the collodion pellicle. This result was obtained, while internally pus ceased to be poured out; lymph was effused and organized, and contraction of the flabby structure occurred, from the external and internal treatment. The tooth became tightened in its socket, and in two weeks' time the case was cured. It is not presumed that in so short a time there was complete repair and restoration of lost parts, but I doubt not that under favorable circumstances the organized lymph will approximate in character to the lost alveolar plate; but should these circumstances not be present, breaking down of the effused lymph will occur, and the abscess again be reestablished. Unfortunately, the lady has now left the city, and the future results cannot be known. In my next communication I will refer to cases of absorption of the alveolar processes and loosening of all the teeth, and their treatment.

"SCREWS FOR SECURING GOLD FILLINGS NO NEW THING."

BY C. E. FRANCIS, D. D. S., NEW YORK.

In the August number of the *Missouri Dental Journal* is an article with the above title. The writer, in referring to the instruments patented by Dr. Mack, asserts that the idea of introducing screws as an anchorage for gold fillings did not originate with this gentleman; but it would seem as if the writer himself claimed the originality of this method, he having tried it as an "experiment" as long ago as the year 1857. By referring to the *American Journal of Dental Science*, April, 1855, it will be observed that Dr. Wm. H. Dwinelle, of New York, advocated the use of screws for this purpose, and published his method, which, however, lacking convenience of application, proved of comparatively little value to the profession, for they were rarely ever used.

The screws of former days bore little resemblance to the delicate and peculiarly formed ones introduced by Dr. Mack. These have a continuous screw-thread from one end to the other, and one end flattened to a V shape, to correspond with the form of the slot in the socket of the "wrench" or "screw-driver." The "wrenches" are of different sizes to suit different sized screws. They are designed to *carry* the screws to the desired places, as well as to snugly secure them, and this they do admirably, enabling the operator to pass them through narrow apertures, and when withdrawn leave the screws, when required, entirely beneath the marginal wall of the cavity, avoiding the necessity of excising the wire—a task, in many cases, difficult to accomplish. Dr. Mack's instruments and screws are certainly a very great convenience to those who use them—drills, taps and wrenches, delicately made and all nicely arranged in a small case, ready for use, and at a reasonable charge. I use them, believe in them, and would not dispense with them in my practice, or go back to old methods, for ten times their cost. Screws are "no new thing," nor does Dr. Mack pretend to any such claim. I used them many years ago, and so have others—but how often? Very rarely *then*, but frequently *now*. We know their value and consider them in many cases indispensable.

I hope the members of our profession possess generosity enough to give credit to every individual who benefits them by introducing convenient appliances, or in any other manner. These instruments cost a trifle compared to their true worth. A single filling recently introduced, which without their aid would have sorely tried patience and skill, more than paid me for a case of them. I believe in *progress*. Get all the good we can from each other, but in an honorable manner. I have no patent inventions to offer, neither any "secrets" to withold, but I do not look upon all inventors, or patent-holders, as extortioners or thieves—although there are doubtless both sorts among them. I consider Dr. Mack's claim a reasonable one, and his charges by no means *extortion*. This I state in simple justice to a gentleman who has given us a useful appliance at a fair value; and having derived benefit therefrom in my practice, tender my acknowledgments by recommending them to others.

DR. H. S. CHASE:—

As you have had far more experience in our profession than myself, I seek your advice or counsel:

The 29th day of last April, I inserted a gold filling in the r. s. central incisor, for a young lady about 18 years of age, and apparently in the best of health, but she is subject to fits. In preparing the cavity, I found the nerve to be almost exposed, but not quite, and it was very sensitive, but after a few pellets of gold had been inserted I found no further trouble. But, alas! the first day of July she returned, suffering from abscess in the tooth. With much pain to the patient, I finally succeeded in removing the filling, and proceeded to treat with creosote and carbolic acid alternately for ten days, when, thinking it well, I refilled, though not without some little pain while attempting to fill the root to the apex with os. artificial mixed with creosote, after which I filled the pulp cavity and crown with gold. But, alas! alas!! the 25th of September she comes again, suffering as before. and with greater difficulty I open the tooth again, and proceed to treat with creosote, carbolic acid and a mixture of iodine and glycerine every other day, and up to the present I have failed to remove all soreness and tenderness at the apex of the root. She experiences no pain or soreness now, except as I probe with a fine instrument near the end of the root. Now, I don't conceive it worth while to refill again without first removing this soreness. Or, is it possible that I pass the instrument through the tooth and cause this pain from pricking the periosteum? or, can it be pus, which, from some hinderance, I fail to bring away? The tooth, from first appearance of decay, has been quite loose and is now slightly colored.

Now, Doctor, the most pointed question I wish your advice about is: Whether or not, if I fail to remove this soreness by the usual mode of treatment for such cases, would it not be better to extract the tooth, clean the root, and syringe out the alveolar cavity with creosote, and replace the tooth immediately, leaving the tooth open for further treatment before filling? Or, had I best quickly fill before inserting, as I should think the filling of it afterwards would be likely to reproduce inflammation, unless filled temporarily until perfectly solid? (if such it should become at all.) I have never performed an operation of this

kind, and I see no account of abscess having been treated in this way (extracting and replacing.) I should think if the alveolar had become much diseased from long standing of abscess, it would be useless to replace the tooth, as it would surely fail to become healthy. Your earliest advice on this subject will be kindly accepted. With respect, I am your, &c., A. W. S.

(REMARKS BY CHASE.)

In the treatment of alveolar abscess we must be careful not to "over do." I force creosote through the root at one sitting, then plug with sandarach varnish and cotton, and then wait a week before seeing the patient again. At the end of that time, if the discharge has ceased and the *nipple* disappeared, I remove the cotton and varnish, and after syringing the pulp cavity, put in a little creosote without force, and then plug again with varnish and cotton. At the end of a month, if there has been no renewal of the disease, I plug the root permanently, and the crown temporarily, with ox. chlo. zinc. If all is right after three months plug crown with gold. I use simply creosote for injections, and seldom resort to it more than twice. You must give nature *time* to help you. *Over medication* kills more teeth, and individuals, than too little. Extraction of the tooth, cleansing, removing diseased periosteum, and slightly cauterizing the same, has often been done in such cases, with more or less success. I should do it in an extreme case.

OBSCURE CAUSES OF DENTALGIA.

BY L. C. INGERSOLL, KEOKUK, IOWA.

[Read before the 10th Annual Session of the Iowa State Dental Association.]

Dentalgia is a technical name for what Burns calls the "hell of all diseases," and comprehends all painful conditions connected with the teeth. To the understanding of mankind generally, tooth-pain is a unit, arising from one simple and single source: the exposure of the dental nerve or pulp. To an enlightened dentist, tooth-pain is known to arise from several sources, individual or combined, and to manifest itself in various distinguishable peculiarities of sensation, varying with the kind of structure involved, and the peculiar character of the influences operating to produce it.

The different kinds of structure composing the dental organs are five: enamèl, dentine, pulp, cementum and peridentium. These may be divided into vital and non-vital. The enamel, containing but about one part of animal substance to ninety-nine parts of mineral matter, is, practically speaking, non-vital. The other four tissues, being largely composed of animal tissue, are vital; and, therefore, subject to such abnormal conditions as are characterized by pain. I am aware that in naming the dental tissues I have added one, the peridentium, not commonly numbered as one of the dental tissues, but as it is developed only in connection with the teeth for their life and nourishment, and ceases its function and its existence when the teeth are removed, it seems altogether proper to class it with the dental tissues. I am aware, too, that there is yet a question in the minds of anatomists whether there are two membranes within the alveolus, or only one—one covering the root of the tooth and another lining the walls of the alveolus, or whether there be but one membrane serving a double functional purpose. There is also a difference of opinion with regard to the identity of this dental membrane; whether it is continuous with the periosteum of the maxillary bones, or continuous with the enveloping sack of the dental pulp. I am inclined to the opinion that there are two distinct membranes, instead of one, and that the peridentium holds vital relations to the membraneous portions of the dental pulp, while the alveolar periosteum is identical with the periosteum of the bone.

If you will permit the digression, I will pass over some of the ground on which my opinion rests:

1st. Inflammation of the pulp so often induces a like condition in the peridentium, that there is strong *inferential* evidence that they have more than a sympathetic relation to each other—in fact, that they are one and identical.

2d. There is strong evidence that this membrane is *not* identical with the alveolar periosteum, in the fact that in the extraction of a tooth the dental membrane is wholly, or in large part, drawn out with the tooth. If there were not still remaining another membrane, lining the walls of the alveolus, the process of repair would not so readily, and without disturbance to surrounding parts, go on, to the complete obliteration of the wound.

So firm is the union of the tooth to the walls of the alveolus, that extraction would cause such complete rending and contusion of any intervening membrane as to result in its utter destruction, and consequent upon this there might be a waste and absorption of the alveolar border truly frightful—to say nothing of the worse danger of necrosis of the maxillary bone.

3d. When inflammatory action causes the peridental membrane to deposit cementum, so as to produce any considerable enlargement of the root, the same bony material is found, almost without exception, deposited in the pulp chamber in globules or angular masses—sometimes even transforming the entire substance of the pulp into cementum. The formation of like tissue in these different localities, under the same circumstances, is striking evidence of the identity of the formative membrane.

4th. In those cases of exostosis, where there is tendency to a bulbous formation of the root by the deposit of cementum, there is often found a cementitious union of the roots of one tooth to another tooth adjoining. In such case there is a total absorption of the intervening bony septa, and *not* a union with it. If the bony septa and the root of the tooth were covered with the same membrane, this deposit of cementum would have united the tooth to the bone, and we should have had a case of anchylosis. The fact that the cementum and the bone are so nearly allied in their structure would favor the idea of a union, if union was possible. But such a case cannot be shown. We often *hear* of teeth being grown to the jaw. The cases will not bear the test of rigid examination. In this physiological impossibility there is strong physiological evidence that there are distinct membranes within the alveoli, one pertaining in all its functions to the teeth, and, therefore, rightly classed with the dental tissues; and the other, pertaining to the parietes of the alveolus, and performing its functions independent of the teeth.

Such are the reasons why I would distinguish the peridental membrane from the periosteum, covering all other bony structure and class it with the dental tissues. As such it holds high rank in its claims on the profession for their study of its functions and its diseases. Being highly vascular and sensitive, it is subject to some of the most excrutiating forms of dentalgia.

It is not my purpose to enumerate the various diseases of the teeth, nor to specify the various pathological condition, functional and structural changes of the vital tissues when diseased,—for in so doing I should make too long an essay for this occasion. Sufficient for my immediate purpose to state that each of the four vital tissues of the teeth have noticable peculiarities in their manifestations of pain which must be studied in order to arrive at a correct diagnosis, and for want of the knowledge of which many teeth are extracted needlessly, others have their pulps extripated, while others still are most damagingly filled. I desire, particularly, to call attention to some of the causes of pain not commonly noted, which need to be understood in determining treatment for a large class of cases that come under our hands. I shall distinguish these as mechanical causes, operating either by endosmosis, restrained exosmosis, or constriction.

The solid material of dentine being tubular in its structure, with its tubules pointing outwardly, toward the surface of the enamel, and opening inwardly upon the dental pulp, it will readily be seen that decay upon the grinding surface of a molar, having caused the death of the dentinal fibrilli, and a waste of all the osteine, or animal portion of the dentine, you have a porous dentine covering a living pulp. This is a condition favorable to endosmotic action, or the forcing of liquids or gases through a porous solid; and in this case forcing foreign matter in upon the delicate tissues of a vital organ.

Mastication is an action of great muscular power. When a masticating tooth comes to be in the condition I have described, the cavity of decay is filled with moistened food, and on the occlusion of the jaws with masticating force the liquid portion thus confined in the cavity is forced through the porous dentine and down upon the pulp. When the pressure is removed the intensity of the pain is somewhat abated, but continues until the elasticity of the pulp and the absorbent power of the solid portion of the food remaining in the cavity, compel the return of the liquid by exosmosis to the cavity of decay. This exosmose action will require a longer or shorter period of time, from five minutes to an hour—the pain gradually diminishing with the exit of the intruder. I will make no account of the irritating effect of this unnatural bathing of the membraneous surface

of the pulp. For at the first, nature is able to cleanse herself by a superabundant flow of lubricating fluid, and thus relieve an irritated surface.

Dentalgia, caused thus by endosmosis, as I have described, is of very common occurrence. In the large majority of cases it is the first of those painful sensations which have power of suffering enough to drive the sufferer to a dentist. It should be distinguished from sensitive dentine, where the pain arises from pressure upon the exposed ends of the dentinal fibrilli. For, in this latter case the pain is momentary and ceases with the removal of the touch and pressure; while in the former case the pain is lasting, as I have described. It should also be distinguished from a very similar condition of the tooth structure, where there is but a very thin elastic lamina of secondary dentine, not porous, covering the pulp. Mechanical force applied upon the outer surface of this lamina causes it to spring inward upon the enclosed pulp, causing a very severe twinge, quite insufferable except for its momentary continuance. This, also, is to be distinguished from sensitive dentine, chiefly by its severity, and from that caused by forcing fluids through porous dentine, by the suddenness of its shock, and also the relief when the pressure is removed.

Permit me to refer for illustration of pain caused by endosmosis, to cases of frequent occurrence in the chair of the dentist. A cavity is prepared for therapeutical treatment by removing the softened dentine, thoroughly removing all debris, and the operator takes a small pledget of cotton, rolled hard, and a little too large to enter easily the opening of the cavity; this is saturated with the medicament, itself calculated to soothe and quiet the sensibility of the pulp. But the cotton ball being so large as to close the mouth of the opening, acts like the piston of a syringe, to force the solution suddenly through the pores of the dentine upon the pulp, causing unnecessary and damaging pain for the moment. The same pain is sometimes caused in a dry cavity by an attempt to force in a stopping of wax, rubber or other pliable material. Atmospheric air is shut within the cavity and forced in upon the dental nerve, as in the other case the liquid was forced in. The same also occurs sometimes in a pulpless tooth, while attempting to fill the root with the same

pliable material, which, on being introduced, closes up completely the entrance to the root canal, and the confined air having no escape, is driven before the plug through the apical foramen upon the main branch of the nerve, or the sensitive peridentium. This pain ceases shortly, and the operation can be completed without further sensation. In such case the patient and the inexperienced operator may both be deceived in thinking that the pulp had not been thoroughly extirpated.

I desire now to call your attention to the reactionary force of exosmosis in causing dentalgia. This I can best illustrate by one or two cases in practice: I was called to see a little girl of five years of age, who had been suffering severely for several days with pain connected with the second left inferior temporary molar. I found her in a febrile, nervously exhausted, and almost frantic state, in bed. The cavity of decay was not large, but deep. On probing I found it without sensation. Her face at the base of the jaw, was some swollen, and within her mouth the loose integument, joining the cheek and gum, was puffed. She could not bear touch upon these swollen parts, but did not yield when the tooth was pressed. All the unfailing remedies for toothache known to the family had been tried, without relieving the pain. The symptoms in every particular, excepting *one,* pointed to an advanced stage of alveolar abscess. This one exception helped me to a correct diagnosis of the case, which I pronounced to be the reactionary force of confined gas, generated in the decomposition of the pulp, and seeking escape by exosmosis. The one exception was, that the tooth was not sensitive to pressure, either sudden or gradual, though slightly sensitive to percussion. But for my noticing this exceptionable peculiarity in the symptoms, I might have left my patient to suffer on with only partial relief, until abscess was established and self relieved by fistulous opening and discharge of pus. In one particular the symptoms were deceiving. There was fluctuation on touch of the soft parts, which in case of abscess indicates the presence of pus. But the exceptional point alluded to above, seemed utterly incompatible with even the possibility of abscess and the presence of pus. I determined at once to liberate the confined gas, and did so by drilling through into the pulp chamber. The child was instantly relieved. The dis-

tended condition of the soft parts was scarcely perceptible in an hour afterwards. With the escape of the gas there was only the slightest possible discharge of purulent matter from the decomposing surface of the pulp.

The next case was that of a lady, thirty years of age. I was called at three o'clock at night to go and see her. I found with her a physician, who had been at her bedside through the night. I did not inquire as to his treatment of the case, but only learned that it had failed to afford anything more than a temporary and partial relief,—the pain speedily returning with great violence. The tooth was the second left inferior molar. It had, on the anterior approximal surface, an amalgam filling, with a line of decay half the way around it. I could discover no swelling of the surrounding tissues, no soreness—the tooth was not sensitive to pressure. I tested with cold water, and no uncomfortable sensation was experienced; I tried warm water, with the same result. I arrived at an opinion thus: It is not an acute inflammation of the pulp, or cold water would cause pain. It is not congestion, or warm water would cause pain. It is not peridental inflammation, or the tooth would be loose and give pain on pressure, and, of course, cannot be alveolar abscess. I examined the extent of the decay, and found no opening to the pulp chamber. I was satisfied that the tubuli were nearly or wholly closed. I determined to make an entrance into the pulp chamber; I did it with a small drill. The pain instantly ceased. The relief to the patient was beyond her ability to express—she had suffered so much in the previous twenty-four hours.

Here, now, was disease so local in its character as to be confined to the pulp chamber, and so spontaneous as to progress under favorable circumstances without worrying pain. But, so soon as the pores of the dentine became clogged, so as to prevent the free escape of the generating gas, its expansive force reacted mechanically to produce the pain.

There is one other cause of pain so occult as often to deceive the dentist, even in a careful examination of the case. For want of a name for this peculiar manifestation of pain, I shall call it bicuspidalgia. It is a pain peculiar to the bicuspids—to sound bicuspids as well as to such as are diseased. In fact, it is not a

disease of these teeth at all, but the patient uniformly locates this peculiar pain in the bicuspids, and in many cases cannot be persuaded that these teeth are not diseased.

I will give an illustrative description by reporting a single case: A boy about twelve years of age, came to my office to be relieved of a painful bicuspid tooth on the lower jaw. I examined both bicuspids on the side where the pain was located, and found them sound. I examined all the teeth on that side of the mouth—all were free from decay. I asked if he had received a blow upon that side of his face? If he had taxed his teeth seriously in biting? If he had taken cold? To all of these questions he responded, no. He had suffered the pain about a week, more severely each day just at evening. I looked for peridentitis, and found none; for inflammation of the gums, and found them hard and healthy. Failing in my investigations to find any adequate cause, I dismissed my patient, advising some simple home treatment. Just at evening he returned, with the report that the pain was increasing, and that I must extract the tooth. As he was standing a little distance from me, I noticed on his chin what is commonly known as a cat-boil, with a red and angry look. Being intent on finding the cause of the trouble, on his previous visit, in the mouth, I had not observed this on his chin. I asked him, how long the boil had been there. He said, "about a week." This time corresponded with the continuance of the pain complained of in the bicuspids. Said I to him, when you get rid of that boil you will be rid of the toothache.

The case is just this: The nerves supplying the lower lip are branches of the same nerve that supplies the inferior teeth. They are distributed through the muscles of the chin like the branches of a tree. Then passing back from the mesian line, they unite in one bundle and pass the outer plate of the maxillary bone through the mental foramen, which is located just below the bicuspids. After passing this point they unite with the main branch of the inferior maxillary nerve. In the inflamed condition of all the soft tissues surrounding the mental foramen, as was true in the case of the lad referred to, the nerves passing through the bone were constricted. This, then, was the cause of the pain seemingly originating in the bicuspid teeth. The

thickening up of the periosteum lining the mental foramen constituted a membranous cord, drawn tightly around the nerves at this point, and thus by mechanical pressure induced the pain. Neuralgic patients will often locate the severity of pain they experience in the region of the bicuspids, while the source of the trouble may be in the second or third molar. This constriction of the nerves at the mental foramen explains the cause.

LOCAL ANÆSTHETIC.

We have received a communication from Dr. Smith, of Syracuse, N. Y., extolling a fluid anæsthetic invented by Dr. Campbell of that city. The preparation is a secret and the article patented. We have nothing more, at present, to say in regard to it.

CHASE.

Mechanical and Miscellaneous DEPARTMENT.

PROCEEDINGS OF THE IOWA STATE DENTAL ASSOCIATION. 10th ANNUAL SESSION.

Pursuant to call issued by the Executive Committee, the Iowa Dental Association met at Des Moines, Tuesday evening, July 9th—assembling at the court-house.

In the absence of President Woodbury and both of the Vice-Presidents, Dr. Tullos, of Iowa City, was chosen temporary chairman. The following named dentists were present:

Dr. I. P. Wilson, Burlington; Dr. R. L. Rathbun, Lyons; Dr. W. O. Kulp, Davenport; Dr. N. H. Tullos, Iowa City; Dr. J. Hardman, Muscatine; Dr. A. J. Rederich, Sioux City; Dr. Gust. North, Springville; Dr. M. L. Jackson and Dr. P. J. Ellsworth, Oskaloosa; Dr. C. M. Gaylord, Mason City; Dr. G. A. Averill and Dr. Johnston, Ottumwa; Dr. C. F. Garretson, Knoxville; Dr. N. H. Baker, Belle Plain; Drs. C. T. Stockwell and G. P. Mann, Des Moines.

A resolution was adopted, inviting the resident dentists and physicians to participate in the discussions, during the sessions of the Association. The evening passed in a very pleasant manner, being merely introductory to the morning session.

WEDNESDAY.

The Association assembled at 9 o'clock, Dr. Tullos in the chair; Dr. Rathbun, of Lyons, Secretary.

The minutes of last evening and last year's proceedings, read and approved.

Dr. Hallet welcomed the members to Des Moines; referred to the object of the Association, believing that they were met to carry out the worthy purposes set forth in its constitution.

Letters were read from Dr. Sanborn, of Tabor, and Dr. Rigby, of Tipton, and Dr. Kellog, of Muscatine, offering excuses for non-attendance. The applications were granted, and Dr. Sanborn, on his own request, was transferred from the active list to the honorary list of the Association.

The Committee on Examinations presented the following report, which was adopted, and the candidates named were admitted to full membership:

Your committee respectfully report, recommending that the individuals named below be admitted to full membership in the Iowa State Dental Society:

A. J. Rederich, D.D.S., Sioux City; graduate of Pennsylvania Dental College.

Wm. H. Thrift, D. D.S., Boonsboro; graduate of Ohio Dental College.

PASSED EXAMINATION.

Charles Garretson, Knoxville; W. H. Barker, Pella; W. T. Johnston, Ottumwa; G. W. Fuller, Des Moines; B. Todd, M. D., Des Moines, graduate of Keokuk Medical College; P. J. Ellsworth, Oskaloosa; T. A. Hallett, Des Moines; P. E. White, Davenport; C. M. Gaylord, Mason City; A. Rawson, Des Moines; G. A. Averill, Ottumwa.

Dr. R. S. Rathbun, of Lyons, was called on for an essay on "Theory vs. Practice," but having been prevented by illness from preparing the paper, he was excused, and the subject was made the topic of a general discussion.

Dr. Wilson thought that we were too apt to have fine spun theories which we do not really practice. We should be practical in all that we advocate, and all that we write upon.

Dr. Rathbun's experience was that dentists both inside of our organization and outside of it were apt to be more visionary than practical. Enough attention was not paid to the annual meetings of the Society.

Dr. J. Hardman, of Muscatine, read an essay on "Dental diagnosis and extraction." The paper waggishly defined the diagnosis of teeth apparently requiring removal, "what I know about extraction," and was a careful examination of the entire subject of extraction, its necessity and manner of procedure.

The following subdivisions contain the substance of the matter connected with the extraction of the six-year molar that is defective: 1st. The degree of the diseased state. 2d. The age and constitution of the patient. 3d. The relative formation of the jaws. 4th. The arrangement of the teeth. The subject was illustrated with cuts and models.

Dr. White took exception to one point in the essay; thought the deciduous teeth should be allowed to remain until the proper age for removal, in order that the permanent teeth might be erupted regularly, and without trouble to the patient; that the deciduous teeth, if carious or otherwise diseased, should be properly treated and filled, that they might be preserved. Would not remove the six-year old molar as a general thing to prevent irregularity, but would extract the second bicuspid instead. His experience had been that the bicuspids were more apt to be defective and difficult to preserve than any of the other teeth.

Dr. Kulp believed in following the plan suggested by Dr. White. Save the temporary molars for mastication, and the incisors for the sake, among other things, of giving the child articulation. If the permanent molar must be extracted, it should be done before the age of thirteen.

Dr. Wilson would extract in cases where there was no probability that the patient would take care of the teeth hereafter, and when, without such care, the operation of filling would be injudicious.

Dr. Smith thought that enough attention was not paid in dental schools to the question of diagnosis. Practice and operation

was taught more fully than the finding out what is really the disease. The text books are not infallible. Does not believe in extracting deciduous teeth. In almost every case they can be saved by careful treatment and a proper regard for hygiene.

Dr. Ingersoll thought that the opinion was too prevalent that extraction of the temporary teeth had a tendency to create a false formation of the arch. Perfect articulation could be obtained more perfectly where incisors were removed than where they were allowed to remain and occasion difficulty in speaking, from the pain they occasion.

Dr. Carter, visiting delegate from the Iowa State Eclectic Medical Society, was introduced, when the meeting adjourned till 2 P. M.

AFTERNOON SESSION.

The morning minutes were read and approved.

Dr. Ingersoll, of Keokuk, was elected chairman *pro tem.*, and took the chair.

Discussion on Dr. Hardman's essay being in order, that gentleman replied *seriatim* to the objections urged against his premises. On motion of Dr. Chase the essay was referred to the committee on publication.

Dr. Mann, of Des Moines, read an essay on "Treatment of Dental Caries." Caries always commences from some cause outside of the teeth. The amount of decay is only limited by the quantity of tissue to be disintegrated. The causes of decay are two—predisposing and immediate. Of the former may be named an unhealthy condition of the mother when the child is in utero gestation; bad diet in childhood, etc. Of the latter the main cause is filthiness. The latter part of the paper discussed the various methods of treatment.

Dr. Kulp said the treatment of dental caries is mainly mechanical, and he proceeded by diagrams to illustrate his plan of operating.

Dr. Smith exhibited the plan pursued by him, making free use of the blackboard to illustrate the same.

Dr. Wilson thought most dentists were deficient in filling near and adjoining the gums, and in leaving frail margins.

A running debate ensued, participated in by more or less of all the gentlemen present, on the various methods of separating

the teeth for the purpose of filling proximal cavities, some recommending rubber, some wood and some cotton, the latter apparently having the preference; and the essay was referred to the committee on publication.

Drs. Knapp, of Chicago, and Clark, of Galesburg, being present, were elected honorary members of the Society.

Dr. Kulp opened the topic, "Successful Dentistry." The successful dentist must have natural qualifications for his profession. He must have a clear plan of the work he proposes to accomplish. He must be an artist, with clear perceptions of order, of strength and of beauty. The ranks of dentistry have many men who have mistaken their calling. The successful dentist must have firm nerves, patience, dexterity, courage. He must be honest. His calling is so much of a specialty that his patients are almost at his mercy. The temptation to slight work is great, but only the strictly honest man can be a successful dentist.

Dr. Wilson thought that dentists frequently failed in making sets of teeth properly by neglect to study sufficiently the philosophy of the articulation of the set.

Dr. Tullos thought success could not be attained except by being honest in words as well as deeds, and animadverted with considerable severity on the decrying of other dentists' skill. Dentists should be cleanly, should avoid strong drink, tobacco, and bad hours; should be temperate in all their habits. The dentist should do the best he could for his patients, without insuring his operations, for insuring is quackery.

Dr. E. C. Chase being called on for an essay on "Dental Chemistry," stated that he was not prepared with one, but would do his best to open the discussion. Chemical examination has done more for dental science than any other auxiliary. By means of it we have been able to discover the various elements that create tartar and other deleterious substances. It is a branch of the studies of the profession too little pursued.

Prof. H. S. Chase, of Missouri Dental College, St. Louis, gave details of several hundred chemical examinations of saliva that he had made, stating that in nearly every case he had found an acid instead of an alkaline reaction. Experiments with healthy animals developed the fact that their saliva was invariably alka-

line. The inference is that the unnatural course of our lives, improper food, etc., are responsible for the acidity in the human mouth.

It will not do to use an amalgam and gold plug in the same or adjoining tooth. Galvanic action must, in such cases, take place in the mouth, and facial diseases will frequently result.

The chairman of the committee on membership reported two cases of members who had been guilty of violating the code of ethics adopted by the Society. After considerable discussion of the report the chairman of the committee on membership was instructed to notify the parties to appear and answer to the charge preferred.

On motion the Society adjourned.

WEDNESDAY—EVENING SESSION.

Dr. Ingersoll, of Keokuk, read an essay on "Obscure cases of Dentaria." It was a paper that attracted much attention, and was highly commended. It was referred to the Committee on Publications.

The order of reading essays was dispensed with, and miscellaneous subjects taken up.

Dr. Thrift detailed the particulars of a case of the removal of a portion of the lower wall of the antrum as far forward as the first molar, and capping with silver plate, and afterward the healing over and the adjustment of artificial denture.

Dr. Ingersoll reported a case of the removal of a tumor, giving the mode of the treatment of the patient. He spoke at some length of the virtues of carbolic acid as a wash in cases of wounds.

Dr. Barker asked information about the extraction of abscessed teeth and roots.

Dr. Waid used with success carbolic acid and glycerine.

Dr. Averill related a case of excessive bleeding after extraction of a stump, subduing the same by saturating cotton with iodine.

Dr. Waid had used styptic collodion in such cases.

Dr. Wilson thought these common styptics add nothing to simple raw cotton. Pressure upon the proper point is all that is necessary.

Dr. Jackson had cured cases of hemmorage with quinine.

Dr. Ingersoll related several interesting instances of excessive bleeding, contending that the *per sulphate* of iron must be considered as the best styptic.

The Society then adjourned till 8 o'clock to-morrow.

THURSDAY—MORNING SESSION.

The attendance was about the same as yesterday.

Dr. Smith delivered an address on "Treatment of Exposed Dental Pulps."

The subject has been revived lately, and at this time is receiving great attention. The carelessness of the people in letting the teeth go till the pulp is exposed, is driving them to the dentist. The speaker explained how much in the dark he is in capping, if upon investigation he finds pulp inflamed and aching. On giving blackboard illustration, finds the cause of pain the influx of blood upon the nervous tissue. Vitality is low at the lower part of the tooth. Relieves pain by giving physic and depleting the system, also by giving mercury in homeopathic doses; locally by carbolic acid and creosote, but not effectually with the latter, as it merely obtunds. The capping most popular now is os-artificial, directly on the nerve pulp. His success has been poor—not a single instance when capping with it has been successful. Soreness in the tooth or death of nerve has followed. Has frequently removed the nerve in consequence. He is *successful* in saturating tissue paper with carbolic acid, or aconite, placing directly over the part of nerve exposed, and and then covering with os-artificial. Spunk might do, when nerve is merely exposed. Some plastic material is better than any other. Treatment will hardly be successful with intemperate persons. Better destroy nerve at once. He reported a case in which all treatment was unsuccessful, tried to devitalize the nerve, but could not, found gums weak, inactive, system thoroughly saturated with nicotine. Also reported another case, where the pulp was exposed in a molar, yet never gave any trouble, except a slight twinge, upon using cold water; the pulp was exposed the size of a pin's head, and forced out a little; treated with the tissue paper medicated as explained above, then capped with os-artificial; this was nine months ago, and no trouble since; regards it as a successful case.

Dr. Jackson asks if the experience of dentists had been that oxychloride of zinc destroys nerves.

Prof. Chase finds it not to be the case now—most of the nerves capped with it live; does not endeavor to save every nerve exposed when the pulp is chronically diseased; endeavor not to wound the pulp, and cut round it but little, unless you can see perfectly—after thoroughly cleansed, wipe *carefully* with creosote—not sop it, then immediately apply rubber dam, then keep perfectly dry—use as little oxychloride of zinc fluid as possible—pass the soft creamy zinc upon the nerve, and finish. At the end of a week the patient must call, or if the tooth is sore, come immediately. If after six months trial he finds the tooth all right, takes all out and fills with gold. Knows only two or three nerves that have died in his hands.

Dr. Jackson mixes creosote with the oxychloride.

Prof. Chase used to experiment with all cases, but now selects his cases.

Dr. North has good success with the oxchloride of zinc.

Dr. Kulp has made experiments in treating congested pulps, by depleting the nerve, and syringing well with warm water, then treating by a topical application, then caps over with oxide of zinc. His habit now is to apply spunk, moistened with creosote, absorbing all the extra fluid with more spunk, then cap with oxychloride. Success has been such as to make him follow that treatment. To-day should not deviate where pulps were exposed and not congested, but treat as above.

Dr. White capped nerves with a thin piece of rubber dam nicely over the pulp, and then fills with oxide of zinc, taking care to keep it dry during the operation. He reported a case capped over a year ago, and filled within the last three months, where the pulp was completely exposed, and filled as above, which is now in a very healthy condition.

Dr. Ingersoll reported his treatment. Find pulp in a state of irritation; simply remove all food; then remove the dentine; then apply Phenol Sodique—the alkaline portion absorbs the acid and is not escharotic; then wipe dry; apply pledget of cotton saturated with gum sandarach; keep hermetically sealed for two or three weeks, then fill.

Dr. Kulp uses creosote, as it formed a coagulum with the albumen contained in the pulp.

Dr. E. C. Chase agrees with Dr. Kulp.

Next followed an essay by Dr. I. P. Wilson. Subject, "How a dentist should treat his patients."

A dental office should be as sacred a place as the drawing rooms in our homes, and a lady should feel as secure in one as the other; violate the sanctity of the one, or desecrate the other, and we cannot expect the good and virtuous to visit either. Perhaps no place is visited with more reluctance than the dentist's office. The patient goes there because it is a painful necessity, therefore let the dentist receive his patients with kindness, and show by his conduct that he is a merciful man, and will not inflict unnecessary pain. A dentist should be an accomplished gentleman, and observe strictly the rules of good society. He would not be treating his patients with consideration, and consume a portion of the appointed time by enumerating the faults of a neighboring dentist, or by egotistically eulogising himself. Would not interrogate patients as to their business, but wait for them to explain. The dentist should be cleanly, have a sweet breath, and should bathe often. Be careful with napkins; let us do nothing that we may lose the honor of our patients and ourselves.

Dr. Kulp followed in urging cleanliness of the dentist with his hands, instruments, and thorough washing of his napkins.

Dr. Gaylord related how they used to do "up in the country" —have bloody napkins, &c., lying round in the office, that strangers coming in might know they were full of *business*, and in preparing the cavities, don't stop and sponge out the chips, but *blow* out the mouth.

Discussion followed by others of the Convention, urging great care in keeping offices clean, &c., &c.

This was followed by a running fire of criticism and experiences, intermingled with instances of the humorous in dental practice.

Dr. Tulloss read an essay on the topic, "Nitrous Oxide as an Anæsthetic." The paper gave a clear history of Anæsthetics, and discussed the benefits and values of the various kinds in use,

favoring Nitrous Oxide above all others for all minor operations. The essay was referred to the Committee on Publication.

Professor Chase considers liquid nitrous oxide the purest and best anæsthetic known. Never uses chloroform, but does use ether on some occasions.

Dr. Rederich read a paper on "Peridentitis and the Peridental Membrane." The essay was a carefully prepared treatise of the subject, setting forth at length the causes of disease in the parts, and the remedies best adapted to their cure. It was referred to the Committee on Publication.

AFTERNOON SESSION.

Immediately after being called to order the Society considered the following resolutions proposed yesterday by Dr. Kulp. After debate, the resolutions were adopted, as follows:

WHEREAS, Our Society has never had published its proceedings in regular pamphlet form, and as there is a great accumulation of such matter, making it impossible to refer to anything in our past sessions, therefore

Resolved, That a committee of three old members and two new ones be appointed, who shall revise, condense and arrange and have published in regular pamphlet form, all or part of all proceedings and essays, including the present session, and send a copy to each member of this Society, and hereafter furnish as many as any may want at the cost of same.

Resolved, That said Committee be limited to the sum of one hundred dollars; and that they be further instructed to procure all the advertisements from manufacturers of dental goods.

The Committee on Publication was appointed as follows: Drs. W. O. Kulp, P. T. Smith, N. H. Tulloss, P. E. White, E. C. Chase.

Moved and carried that the next meeting take place at Davenport, on the second Tuesday in May, and that the Executive Committee be authorized to make arrangements for a joint meeting with the Illinois State Dental Association.

Dr. Hardman offered the following preamble and resolution, which was adopted:

WHEREAS, The time has come that the thorough qualification of students in any of the learned professions is the just demand of the people of any State or community; and,

WHEREAS, The evidence now generally recognized by the people as most reliably showing the qualified claims of the Dental Physician, is that justly rendered by the legitimate college education and training; and,

WHEREAS, The Medical Department of the University of Iowa is now a fixed, successful and worthy institution of our commonwealth, greatly enhancing the facilities to professional qualification in an economical way to the medical student; and,

WHEREAS, The claims of the dental profession for comparatively equal facilities are self-evident; that while the medical student of Iowa can now with a small outlay procure his instructions and diploma, the dental student is compelled to go abroad at an outlay of $500 to $1000; therefore, we, the dentists of Iowa, in convention assembled, do

Resolve, That we do pray the honorable, the medical faculty and the regents of the University to the end, that a case of chairs be added, viz: One of the institutes of dental science, one of surgical and operative dentistry, and one of mechanical dentistry, with equal privileges with the students of medicine to the lectures of Anatomy, of Physiology, of Chemistry, etc., etc., thus to establish thorough dental college facilities; and that the said dental chairs be supplied with professors, by, and from out of the twenty State Dental Associations.

Drs. Tulloss, Hardman and Chase were appointed as a committee to carry out the purposes of the resolutions.

Drs. Jackson, Wilson and Ingersoll were appointed the committee to confer with similar committees from other Dental Societies, and with Dr. White with reference to the rubber patents.

The society then proceeded to the election of officers, with the following result:

President—Dr. L. C. Ingersoll, of Keokuk.

Vice-President—Dr. M. L. Jackson, of Oskaloosa.

Recording Secretary and Treasurer—Dr. P. E. White, of Davenport.

Corresponding Secretary—Dr. A. J. Rederich, of Sioux City.

The reports of the Treasurer, Corresponding Secretary, and the Chairman of the Executive Committee, were received and adopted.

The Committee on Legislation reported by their Chairman, Dr. Kulp. The report was received and the Committee discharged.

The President appointed the following standing committees:

Executive Committee—Drs. W. O. Kulp, I. P. Wilson, J. Hardman.

Publishing Committee—Drs. E. C. Chase, P. E. White, J. S. Kulp.

Committee on Membership—Drs. J. Hardman, N. H. Tulloss, P. T. Smith.

The following were appointed to investigate the matter of a Dentist's Life Insurance Company, to report at next annual meeting: Drs. Smith, E. C. Chase, and Rathbun.

The usual resolutions of thanks were passed.

Agents were present, showing Black's "Helper Lathe," Morrison's "Burring Engine," and Johnston Brothers' liquid Nitrous Oxide Gas apparatus. The instruments were fully tested, and their merits discussed by the members present.

Association adjourned, to meet at Davenport on the second Tuesday in May, 1873.

The meetings of the Association were very well attended, and great interest was manifested throughout. It is to be hoped that much has been learned from the discussions, and that the members will feel a renewed determination to attend the meetings hereafter, being better prepared to receive and extend the *truth*. In this manner, we may expect to stand in the front ranks of our profession, become better dentists, and wiser men.

P. E. White, Recording Secretary.

DR. MORRISON'S NEW DENTAL CHAIRS.

Our readers will no doubt be gratified to learn that Dr. Morrison has completed the new Dental Chairs, upon which he has been working for a year past. That the Doctor has spared neither time or money in his effort to get up something which should meet all the requirements in the way of a dental chair, is evidenced, we think, by the result.

A few evenings since, the Doctor invited the profession of St. Louis to examine his chairs; some twenty gentlemen were present, who expressed themselves as more than pleased with them. Chair No. 1, which appeared to be the special favorite, was designed to meet the want of the profession for a cheap chair. It is made wholly of iron, and is modeled somewhat after the old Morrison chair. It is mounted upon a base of unique pattern, fifteen inches in height, by means of journals, one on either side of the seat, so placed that it is nearly balanced at any

angle. The backward and forward movement is controlled by an armed nut worked by the foot. The foot-rest has a simple device for extension, which also serves the purpose of elevating it, when used for children. The arms are movable, as in the old Morrison chair. The whole chair can be raised to the highth of forty inches by means of a single ratchet and pin. The back is capable of extension from twelve to twenty-four inches. This is a noticeable feature, and a good one. It is made up of three pads—one at the base of seat, one in the centre, and one at the top. The centre one can, by means of a thumbscrew, be placed in any position to fit the back of the patient, or it can be re moved altogether, when the chair is desired for a child. The back being thus open, it leaves the shoulders free—a decided improvement over other styles of chairs, which cramp and tire the shoulders. The head-rest is the old Morrison rest. A circular slot in the center-piece of the back permits of its being moved to either side, to suit the wants of the operator.

Chair No. 2 is the Doctor's pet. It is also of iron, of a decidedly unique pattern—something entirely different from anything we have seen. It is supported upon an iron column or pedestal, at the left side of the chair, the base of the column passing underneath it. It is hung to this column by means of rachet pins, by which it is raised or lowered. The seat can be brought to within fifteen inches of the floor, or elevated to forty inches. It has also a backward and forward movement, controlled by a spring. Another noticeable feature in this chair is the adjustible back, capable of being adjusted to fit the back of any patient; it can also be lengthened from twelve to thirty inches. The head and foot-rests are the same as on chair No. 1. Attached to the column is a crane for the spittoon; also for a case of instruments. Morrison's Dental Engine may also be attached to it if desired—the treadle passing under the chair.

It will be observed that the Doctor has had in view the comfort of the operator as well as patient, in so constructing his chairs that the top of the seat can be brought to within fifteen inches of the floor, thereby enabling the dentist to operate sitting in an ordinary chair.

At a late meeting of the St. Louis Dental Society, chair No. 2 was christened "the St. Louis." The Doctor is now making arrangements for their manufacture, and we hope soon to see them in the market. EAMES.

THE RUBBER SUIT IN THE GARDNER CASE.

The profession are but too well aware of the fact that Bacon obtained a quasi-decision of the Supreme Court in his favor, but we have just been advised by telegraph, from Philadelphia, that

S. S. White made a motion before the court to dismiss the case on the ground, we think, that fraud had been practiced by Bacon, and the motion to dismiss was allowed to be filed.

This may be of much more consequence than would at first appear. This delays the final decision, and if the charges of fraud are sustained and the case dismissed, the whole thing will work greatly to the detriment of Josiah, and our contest with him will be much more certain to be successful.

The influences which were brought to bear upon the court to obtain this favor, it is not necessary now to detail. Let the profession do their part, and the committee, which is steadily at work, will do theirs, to place Josiah and his confreres where they belong. J.

WANTED.—A First-Class Dentist—to take the entire charge of the mechanical department of an office. Must be a graduate of some accredited college, and qualified to do all kinds of work pertaining to the art in the very best manner. For particulars address MISSOURI DENTAL JOURNAL, 819 Locust street, St. Louis.

THE LAURENCE FILE HOLDER AND PORTE POLISHER.

This little invention of Dr. Laurence is one of the most universally useful instruments that we have seen for a long time. It serves admirably the purposes for which it is designed. It is so constructed with adjustable jaws as to be instantly adjusted to the thinnest or thickest separating file—holding either with equal firmness. It may be used for separating teeth, or dressing off proximal surfaces of fillings, by the use of a short piece of a separating file set at any desired angle. Chisels, made of broken separating files or thin pieces of steel, can be made of several forms and readily adapted for cutting away the enamel, or as scalers. It is also useful for holding slips of wood or stone for dressing off and polishing fillings. Chisels, scalers and excavators of different forms, are furnished with the instrument, if desired. For sale at Leslie's Dental Depot.

VULCANIZABLE GUTTA PERCHA.

We refer our readers to the advertisement of A. M. Leslie & Co., in the present number of the JOURNAL, of the Gutta Percha for dental plates. It is used in every way as the rubber is used, and has so far given perfect satisfaction as a substitute for rubber where it has been tried. If Josiah attempts to claim it, we are of the opinion that he will have a rough road to travel.

J.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] NOVEMBER, 1872. [No. 11.

ANÆSTHESIA.

[A Paper read before the Brooklyn Dental Society.]

BY W. IRVING THAYER, D. D. S.

Gentlemen, you undoubtedly believe with me, that the study of Anæsthesia is a duty we owe our patients, as well as ourselves. Since the discovery of anæsthesia it has been of great utility to the human family; certainly it has saved many a patient from a fatal shock in capital operations, but at the same time it has piled up dentine till the "offense of it smells to heaven." With good we sometimes have evil, and the too frequent extraction of the teeth is certainly very objectionable.

With regard to anæsthesia, what do we know about it? Some pretend to be in the knowledge of it—"as wise as serpents, and harmless as doves." They prostrate one patient here, then congest one's lungs there, play havoc along the alveolar borders, and invite the demons to take possession of their victims. I affirm that no one has any business to administer an anæsthetic, who cannot give some intelligent explanation of the laws of respiration. Possibly, nothing is known of respiration beyond a certain degree; yet by the arduous labors of eminent physiologists we have been enabled to learn much of its important truths, and to govern ourselves accordingly. We have been taught, in fact are told to-day, that respiration is an interchange of gases; as, for instance, carbonic acid passing into the lungs from the venous blood, and the corpuscles taking up oxygen. Respiration is not one substance passing another; it is nothing

more, nothing less, than that the blood corpuscles take up just four per cent. of oxygen, and convey it off. From what do they receive their supply? You answer, with me, from the air we breathe. If this constitutes respiration, how long shall we have respiratory action, a free circulation, when the blood corpuscles are deprived of their normal supply? In five, ten, or fifteen minutes the asphyxia will be complete. I care not what produced the apnœa—whether it is a rope around a culprit's neck, or something drawn directly into the lungs—the effect is the same. Apnœa was produced, resulting in asphyxia; that is pulselessness, which is death.

What is anæsthesia? As commonly understood, it is insensibility to pain. But, to be more accurate in our description, we would say, it is a *decrease* and a *decline* of function, tending to suspension. What more need I say, what more can I say, to show that we are treading on dangerous ground, when we attempt to deprive the corpuscles of receiving their life-giving principle? Can we not get from this an inkling of the truth, and be very cautious how, and what agents we use to produce anæsthesia, when they are fraught with such vast consequences? Who will deny, that to produce an unnatural condition of things, to produce anæsthesia, to suspend, or attempt to suspend a part of the functions of the system, is not, to say the least, an approximation to danger, if not an actual trespass upon forbidden ground? Since then, as it appears that no state of anæsthesia (because it is a decline of function) is a perfectly safe and normal condition, what can we say in favor of an agent which *wholly* prevents the blood corpuscles from receiving their necessary supply of oxygen? Let me ask the question more directly, what can be said in favor of *nitrous-oxide?* As for myself, nothing; for I believe it to be almost as vile a *compound* as ever bathed those delicate lung tissues. Nitrous-oxide, and also water, are compound substances. This we all freely admit. Nitrous-oxide, as we all know, is composed of two elements, equivalents of nitrogen and oxygen. Water is also formed by the *union* of eight parts by weight of oxygen and one part of hydrogen. Note the point, that they are each composed of certain elements, one of which in either case is oxygen. The latter is just what the corpuscles take up. Now, we know that the af-

finity of hydrogen and nitrogen for oxygen is greater than that of the corpuscles for oxygen. In proof of what I say, let me ask how much venous blood will be changed to arterial while the lungs are filled with water? How much oxygen will leave the hydrogen and go to the blood corpuscles? None of us question the indivisibility of water while in the lungs, or that if they (the lungs) are filled with this bland fluid, we shall not have perfect insensibility to pain. But, of course, no such thing could be said of nitrous-oxide; O, no. The air we breathe is not a chemical compound. Do you ask me for my proof? Here I offer for your consideration some remarks from Dr. Johnson; who says: "the question has often been discussed, whether the oxygen and nitrogen of the atmosphere are to be considered as chemically combined, or only in a state of mixture, but the latter opinion now generally prevails." "Only in a state of mixture!" Here, then, we have a solution to the puzzling question of how the corpuscles seize upon the oxygen and convey it off. It is because it is free—a freedom on which our very life depends. Make a chemical union of these two elements, and how many of us, to-night, would be free from that anæsthetic state that knows no waking? My same authority says of protoxide of nitrogen: "This is a permanent, colorless gas, of a sweetish taste and smell." Note that he says "permanent;" that is, diametrically opposed to division. In a previous paragraph he says: "Oxygen *combines* with nitrogen in five different proportions." The point I have in view is, that oxygen *combines* with nitrogen. "*Combines*." What do we understand by combine? Webster says it is: "To form a union; to agree; to coalesce; to confederate; to *unite* by *affinity*, or *natural* attraction." That's a pretty close union; in fact, its *one*, a *unit*.

To break up that individuality some force or attraction greater than their uniting power must be used to sever their co-partnership, before their elements can elope with something else. We know that the lungs, and nothing within them, have the power to resolve a compound substance that may be in them into its original elements. If nitrous-oxide be in the lungs, and as we have shown it to be an indivisible compound substance, having no power exerted upon it to change it to its original elements; and since the corpuscles take up nothing but oxygen,

and none of its compounds; how long, let me ask again, are the corpuscles going to withstand such a state of affairs and not be affected thereby? Do you ask me, how I know that the corpuscles do not get some oxygen from the nitrous-oxide, and demand ocular proof, and the evidences of your own senses, before you will believe that what I say is true? Then permit me to remind you again, that nitrous-oxide is a staple compound, and that it has no free oxygen in it for the corpuscles to seize upon, as the atmosphere has; for the oxygen and nitrogen are not compounded together in the air, they simply lay in juxtaposition one with the other. For the ocular proof, I have but to request you to fix your eyes upon the patient's blue face; then tell me, if you can, that the corpuscles are receiving oxygen from the laughing-gas, when the venous hue of the blood tells the tale in such unmistakable language that he who runs may read, if his eyes are not blinded with prejudice, and he will not be convinced. That venous hue of the face shows too plainly that the venous blood is venous still. It may glide over those delicate lung tissues, search those hidden depths for its needed pabulum, yet it will be forced along those numerous vesicles only to leave them in a more pitiable condition than when it came to receive a new life freight to distribute to the tissues.

"There are three facts," (says a great advocate of the gas, in a card he published in several New York daily papers,) "connected with this *death* to be noted. (This is referring to the death of Mrs. Ann O'Shaughnessy from gas.) The third *fact* which this gentleman offers you is, that "the lungs were found to be in a state of asphyxia." Well, who doubts that, since we find an asphyxiated lung in every dead body. This term of asphyxia is used in a too loose way, giving no idea of what is intended to be conveyed or understood. Asphyxia is derived from two Greek words; the first signifying privation, the second meaning pulse. Put them together and they mean without pulse, or pulselessness. Then the lungs in a dead body, of course, would be found to be in a state of aspyxia. This same gentleman, in his endeavor to prove that nitrous-oxide did not kill this patient, says: "There would have been no asphyxia, as the gas, containing as it does more oxygen than the air, rapidly oxygenizes the blood and prevents asphyxia and congestion."

Gentlemen, does merely the statement that the gas contains more oxygen than the air, prove that the corpuscles can or do get any of it? No wonder a man can be an exponent of nitrous-oxide, if he believes such nonsense as this, and say "its hard for truth to overtake a lie." Let me repeat his words, "rapidly oxygenizes the blood," which shows he is grossly ignorant of the facts in the case; while in fact nitrous-oxide is as indivisible in the lungs, and withholds its oxygen from the blood corpuscles as effectually as water would do. He continues, in the same paragraph to say: "Indeed, one of the most distinguished professors of chemistry," (not of physiology, mark you), "in our city, maintains that a law should be passed compelling dentists and surgeons when administering chloroform to have some nitrous-oxide gas on hand, to restore the patient in case asphyxia or congestion is threatened." We are to understand by this, that when a decline of function has been induced we must get a greater decline by preventing the corpuscles from getting that substance (oxygen) which alone can revivify them, and bring the patient back to consciousness. That practice may suit others, but as for myself, I should expect favorable results only when I had complied with the immutable laws of the Almighty.

Do you ask me for further proof of injurious effects of the gas, by bringing forward actual cases where patients have been injured by inhaling it? If so, I present the following for your consideration:

Case I. Mrs. C. H. French inhaled the gas at about 5 P. M., July 31st, 1869, in Boston, and was till 7 P. M.—two full hours—in recovering from its immediate effects, having during this time, "great distress" in the pleura cavity and pain in the lungs; hard work to breathe, and limbs very cold; a distressing pressure in the head; pallid face, with great rigidity of the masseter and temporal muscles, Described her feelings "as though she thought she would stop breathing in spite of herself," with a marked decline of the different functions of the body. It was till the following Wednesday—three consecutive days—before she felt like her former self again.

Case II. Miss M. inhaled the gas to have some teeth extracted, was seized with congestion of the lungs, and died within twenty-four hours from breathing the nitrous-oxide.

Case III. A lady inhaled the laughing-gas from the same receiver as Miss M., in case No. II., and died of pneumonia within twelve hours of Miss M.

Case IV. A married lady of Cambridgeport, Massachusetts, noted for her general good health, inhaled the nitrous-oxide on Court street, Boston, and the immediate effect was to deprive her of her reason, from which she never recovered for one instance, and died a raving maniac in one of the lunatic asylums of that State in less than one year from the time she first inhaled the gas.

Case V. Mrs. Ann O'Shaughnessy recently inhaled the gas in New York, and died from the effects of it, as affirmed by the coroner's jury. We are told by a gentleman, in a published card of his, that he "breathed some of the gas the next morning, which he (the operator) administered to this lady, and found it good." Hear the verdict: "We find that Mrs. Ann O'Shaughnessy came to her death from asphyxia, or apnœa, as evidenced by the symptoms manifested by the patient before death, and the conditions found at the *post mortem*; the asphyxia having, in our opinion, been induced by the inhalation of gas administered." Whose opinion is this we are quoting? Is it some inexperienced men who do not comprehend or know the difference between asphyxia and apnœa? By no means; they are the most remarkable jury I ever heard of being called together; they are every one of them medical men, who know something of the pathological conditions they are called upon to examine. We are not called upon as a profession to perform many surgical operations, yet, nevertheless, we have need quite frequently to use an anæsthetic; and it seems proper for us to ask, can we find and use successfully any other anæsthetic agent, except this indivisible compound, this choke-damp, this popular death dealing agent? I answer that we can find in chloroform and sulphuric ether, and their analoges, all that can be desired in anæsthetic agents. You can kill with them if you desire, or you can uniformally be successful. You can get a dangerous decline of function if you choose, or you can maintain a safe control over your patient, if you will only do one thing, and that is, permit them to have somewhere near a normal supply of oxy-

gen from the air, enough to satisfy the incessant demand of the corpuscles, which alone can prevent a decline of function beyond your control.

[*From the Boston Medical and Surgical Journal.*]

REPORT ON ANATOMY.

BY THOMAS DWIGHT, JR., M. D., HARV.

It is proposed to consider, in this report, the present position and recent progress of human anatomy, but the lines dividing it from the kindred sciences of physiology and pathology are so vague that it may be hardly possible to avoid overstepping them; anthropology and comparative anatomy will also obtrude themselves in the discussion of certain questions. No apology is necessary for introducing histology, as it forms a legitimate part of the subject.

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MICROSCOPY.

In regard to microscopes, it is very gratifying to see Prof. Rutherford's remarks (*Quarterly Journal of Microscopical Science*) in praise of a simple instrument, now that those chiefly used in England and America are rendered complicated and expensive by mechanical appliances to do what the educated hand can easily accomplish. He says: "The microscope which, in my opinion, is by far the best for the student and any one who wants really to work is that made by Hartnack." We admit that it is not the best for those wishing to play with diatomes and test lines; but if any one with a good "Hartnack" is unable to do first-class work in histology he may be sure that the fault is not in the microscope.

The nomenclature of objectives has of late been discussed by Ward, in the *American Naturalist* for March, 1872, and by Woodward, in the *American Journal of Science and Arts* for June, 1872. There are also some articles on the subject in several of the later numbers of the *Monthly Microscopical Journal.* A universal nomenclature would, indeed, be a great convenience, but we fear it is not to be expected.

The subject of micro-photography is a more important, and also a more hopeful one. It is, perhaps, not too much to hope that in a few years the original photographs will take the place

of drawings. There will then be less doubt than now as to how many effects are due the draughtsman. (Vide *Schultze's Archiv*, vol. vii. p. 267, 1871.)

Mr. Wenham, in the *Monthly Microscopical Journal* for June, 1872, describes "an improved reflex illuminator for the highest powers of the microscope."

Drs. Klein and Sanderson, in a preliminary notice on the anatomy of serous membranes, in the *Quarterly Journal of Microscopical Science* for April, 1872, state that the best way to demonstrate the lymphatic system of the diaphragm and neighboring parts is to keep a rabbit without food for sixteen or twenty hours; then to inject a small quantity of a five per cent. solution of Prussian blue into the abdominal cavity, and four or five hours later to kill the animal by bleeding or strangulation.

In the *American Naturalist* for April, 1872, H. L. Smith gives a method to make a frog motionless and apparently unconscious for many hours. All that is necessary is to plunge the frog into water about as hot as the hand can comfortably bear—about 120°—and to keep it there until it becomes rigid. The abdomen may be opened, the mesentery drawn out, and the circulation studied for a long time.

For putting up preparations, glycerine is not altogether satisfactory. Max Schultze, in his *Archiv* (vol. vii. p. 180, 1871), says that it makes certain parts too transparent, and, by uniting with fat, makes alterations in refraction, besides turning black when it comes into contact with hyperosmic acid. He recommends very strongly a concentrated solution of acetate of potash, to be used in the same manner as glycerine.

Luys, in Rolin's *Journal de l'Anat. et de la Phys.* for March and April, 1872, gives a method of completely removing chromic acid from specimens which have been hardened in it. It is to put the section between two pieces of thin glass, and, thus protected, to immerse it in a concentrated solution of caustic soda for a few minutes, during which the tissues will swell and become transparent. It is then put into a mixture of two parts of hydrochloric acid and one of water, which causes the tissues again to contract. After five minutes immersion the specimen is transferred to water, which is changed daily for two or three days. The section will then have regained its original color,

and may be stained if desired. Luys has apparently used this method chiefly with sections of the nervous centres.

Rindfleisch, in *Schultze's Archiv*, (vol. viii. heft 3), describes a method for isolating the nerve fibres and ganglion cells of the brain, which gives beautiful results. Macerate a small piece of the cortical substance for ten or fourteen days in a 10 per cent. solution of hyperosmic acid, and then keep it for a week or so in glycerine. The specimen may then be easily broken up into small bundles of fibres. One is selected and put with a drop of glycerine under a covering glass into a sort of cell. The glass is then repeatedly tapped lightly, and the motion of the fluid breaks the specimen into the finest elements.

Great as have been the results obtained by the use of chloride of gold, it appears that still more is to be expected from it. Dr. Klein, in the *Monthly Microscopical Journal* for April, 1872, figures the results he has obtained in the cornea of rabbits and guinea pigs by using it in a new manner. The cornea is laid in a one-half per cent. solution of the chloride; if from a rabbit, it remains there for an hour and a half to two hours, if from a guinea pig, from an hour to an hour and a quarter. The specimen is then washed and exposed to the light in distilled water (to be occasionally changed) for twenty-four or thirty-six hours. It is then left for two or three days in a mixture of one part of glycerine and two of distilled water. A very delicate brush should be gently passed over the anterior surface to remove any remains of the precipitate, and sections should be made with a sharp razor. By this method the very smallest nerves are brought into view.

Dr. Arnold, in the *Philadelphia Medical Times*, July 1st, 1872, states that the results obtained by hæmatoxylin as a staining agent are much more satisfactory thon those by carmine. An abstract of the article will be found in the number of this *Journal* for August 8th ult.

OSTEOLOGY.

"Synopsis suturarum et epiphysium" is the title of a very thorough enumeration in Latin of all the epiphyses, and of all the places where two or more bones or, for the time, distinct parts of the same bone come together. *Auctore Kinberg* (*Publications of the Roy. Acad. of Stockholm*, 1870.)

There is an interesting account of the condition of the skull in old age, by Sauvage, in the *Bull. de la Soc. de l'Anthropol. de Paris*, for June and July, 1870. The chemical changes are taken first. The author finds that the water is diminished. With advancing age the quantity of mineral matter becomes proportionately greater and that of organic matter less, although there is an increase in fatty substances. The loss in capacity and the gain in weight are very trifling. The greater depth of the vascular grooves is due to thickening of the bone, for a section shows the layers bending under the grooves, while the inner ones would be cut through were the grooves caused by wearing away at the bone. Thinness of the skull, from Pacchionian depressions, usually co-exists with deep grooves, and the depressions are usually more numerous and deeper on the left side. The obliteration of the sutures begins towards the age of forty-five. The coronal and lambdoidal follow the sagittal. In the coronal suture the obliteration begins in the middle, and is more perfect on the right side than on the left. In the lambdoidal the process begins on the right side and travels along the suture.

In the same number Dr. Le Courtois considers the morphological changes in the vault of the skull, according to the age and the cranial type. He has no doubt that from birth to adult age the parietal region undergoes a considerable diminution of convexity, and that during the same period the frontal and parietal protuberances become less and less prominent with even greater rapidity. He shows by a large number of observations that, contrary to the opinions of Welcker and Schaaffhausen, the skull at birth may be of any type, either very narrow or very broad.

Prof. Calori publishes a paper on the so-called Scafoid Cranium (Scafocephalus of Baer), in the *Mem. Acad. Scie.* of Bologna (2d Series, Vol. 10, Fasicl. 3, 1871).

Dubrueil shows from sections made just above the middle of the fibula of an adult, of a child of five and a half, of a child at birth, and of a six months fœtus, that the size of the canals increases in direct ratio to the age, and that the number diminishes. His tables appear to show that the latter change takes place more rapidly than the former, so that the bone becomes

less and less vascular. (*Vide Robin's Jour. de l'Anat. et de la Phys.*, January and February, 1872.)

"Growth of the Human Body in Relation to Giants," by Carl Langer (*Memoirs Imp. Acad. Sciences of Vienna, Vol.* 31, 1872), is the title of a long and valuable paper, in which the proportions of the body and the laws of growth of its various parts at different ages are studied very carefully. He considers the proportions of children, of adults of medium size, of very tall men, and of giants, keeping the last two classes quite distinct. As it would be impossible to do justice to this paper without a great deal of space, we give only some of Prof. Langer's conclusions:

"Gigantic growth is merely a continuation of the normal development of the body; but because some divisions of the body cease sooner to expand, and because others do not keep up with the long bones in rapidity of growth, in overgrowths certain discrepancies necessarily occur as well in the formation of certain bones as in the dimensions of certain divisions of the body, and occasionally not less in the proportions of the whole figure. It is in these discrepancies that lie the peculiarities of giants." As the excessive growth rarely begins before the tenth year, and is usually completed by the twentieth, Langer would have that point of equal importance with those above mentioned to determine if any case of unusual growth is to be called gigantic.

The last number (*July and August*, 1872) of *Robin's Journal* contains the first of what promises to be a valuable series of papers, entitled "Anatomical Researches on the Normal Curves of the Spinal Column in Man and Animals, by Dr. Bouland." The present paper treats only of the normal antero-posterior curves in man. After giving several extracts from the works of celebrated anatomists, Dr. Bouland states the present belief to be as follows: "1st, That at birth the human spinal column presents no curves, if examined in a horizontal position; 2d, That up to the age of five or six years it presents only temporary curves or posterior curves, which disappear in the horizontal position; 3d, That the permanent curves, which are formed later, are, according to some, the results of various mechanical actions, while, according to others, they are the effects of the organization itself."

To investigate the matter, he took an equal number of subjects of both sexes, removed from each the head and limbs, the viscera and soft parts, so as to have merely a ligamentous skeleton of the trunk. This he imbedded in plaster of Paris, and, when it had become hard, divided it by an incision through the middle of the vertebræ and of the sternum. He arranged his specimens in four groups: the first of children at birth, the second of fifteen or sixteen months, the third of about three years, and fourth of about five. At birth he finds the line of the spinous processes perfectly straight, but that of the bodies already curved. There is more or less of a cervical and dorsal curve in all the groups, but the lumbar curve is usually absent in the first two. The author proves by experiment that the ligaments have no share in forming the curves, which depend entirely on the difference in height between the anterior and the posterior surfaces of the bodies, (consisting of the central osseous nucleus and of the cartilaginous epiphyses, and of the intervertebral discs. As a rule, the curve in the back is caused chiefly by the bones, those of the neck and loins by the intervertebral cartilages. Dr. Bouland concludes that the cervical and dorsal curves depend on laws of organization, and not on mechanical causes arising from the upright position of the human body; but that this has an effect on the lumbar curve, as this is not constant till the child has begun to walk.

A full account, by M. Riviére, of the fossil skeleton, which he discovered last March near Mentone, has, we believe, not yet appeared. We gather, however, from various sources, that the specimen has been moved to Paris, but not with such perfect success as could be wished, as the parts in contact with the ground were far gone; that the skull is narrow but not prognathous, that the orbits are quadrilateral, and the tibiæ flattened.

Operative and Surgical Department.

GLASS BEADS.

These little articles in many cases will be found of great assistance in adjusting and retaining the rubber dam. Those best adapted to this purpose are white in color and about one-eighth of an inch in diameter. Slip one on a well-waxed thread of E E or floss silk, and tie; then put on another, and tie as before—so, when adjusted, (for instance to a lower molar), the beads will be one on the lingual and the other on the buccal side. Tie this thread firmly, and, if it be necessary, pass the thread around above the beads once more, making them more secure; then slip the dam over the beads, and, if necessary, pass another thread around—the dam is then very secure. G. O. H.

WHEN TO ADJUST THE RUBBER DAM.

It is the practice of the dental profession generally to prepare the cavity for filling before adjusting the dam, but to this practice there is one serious objection, viz.: the impossibility of getting the cavity sufficiently dry in the short time allowed after the dam is adjusted before the filling is commenced. It is necessary in filling a tooth, to produce good results, to have the cavity as dry as possible. Chemistry teaches us that it is almost impossible to make anything *perfectly* dry. It seems reasonable to suppose that a cavity will be dryer if it be prepared, after the dam has been adjusted, than it would if it had been prepared before; besides, it is much easier and quicker to blow (with a dry syringe) the chips and dust from the cavity, than to wash them out and wipe the cavity with some absorbent every time an examination is necessary. Again, there are many cases where by preparing the cavity dry, much pain is prevented that would have been had it been prepared wet. G. O. H.

GALENA, Oct., 1872.

THE EMPLOYMENT OF SALIVA IN OLDEN TIMES.

BY M. PAUL SAINT-OLIVER.

[Translated from the French by H. Judd, M. D.]

Among those substances the use of which is totally forgotten, we might mention the saliva; still in olden times it played a very important part. The saliva of a woman who was fasting was good for blood-shot eyes, *oculis cruentatis*, and it also cured *stilicidium lachrimarum epiphoras*. It was simply necessary to wet the corner of the eye with it, and it became a great deal more efficacious, if the woman who furnished it had abstained the night before from eating and drinking. Opthalmias, *Lippitudines*, were relieved by operating in the same manner, and headache, *cervicis dolerem*, by carrying some saliva, fasting, with the right hand to the right thigh and with the left hand to the left thigh. The saliva from a man fasting was a protection against serpents, *contra serpentes præsidium*.

The same antidote was used to counteract the influence of charms, and the bad omen of meeting any lame person on the right side. Persius speaks of lustral salivation, *lustralibus salivis*, which avert the charms cast by the evil eye, *mauvæs œil urentis aculos*, upon young children, whose forehead and lips were moistened with saliva. Here is an imitation of this passage of Persius: This old grandmother, believing in the art of protecting from charms and from the evil eye, moistens with saliva with her dirty fingers the forehead and humid lips of a child. She strikes her hands and asks for it, not impregnable virtue, but marble palaces, unlimited power, illimitable fields and countless slaves.

A remedy which protected from sorcery consisted in spitting in urine immediately after it was passed. To spit in the shoe from the right foot before putting it on; to spit whilst crossing a place where one had run some danger. If after having struck some one he should repent, it would be necessary to spit in the hand which had wounded his enemy, and the pain of the latter would immediately disappear. A blow is increased by spitting on the hand before striking. If one has been too ambitious, he should ask pardon of the gods for it and spit in his bosom.

To make remedies operate, one is recommended to spit in order to conjure the disease, at the same time addressing a prayer three times to the gods, and to cure incipient furiuncles they must be moistened three times with saliva fasting. When a stranger enters a house and casts his eye upon a sleeping infant, the nurse immediately spits three times, although at the same time the child was under the protection of the god Facinus, the protector not only of young people but also of those who triumphed. This is because the nurse fears that the newcomer will throw, by means of a glance, a charm around the little nursling.

Marcius of Smyrna, who has written a book upon simple medicines, *simplicibus effectibus*, reports that saliva causes marine multipedes to burst, *rumpe scolo pandras marenas*, as also *rubetes* and frogs. Opelius says that it produces the same effect upon serpents, if one spits in their mouth when it is open. Salpius pretends that one can remove a torpidity of any member whatever by spitting in the bosom, or by moistening with saliva the upper eye-lid. The bite of a man is considered very dangerous. (Plin. xxviii. 7, 8, 22.)

Saliva from one fasting was regarded as a remedy which cured cicatrices resulting from wounds in the eyes of horses. It was mixed in the mouth with some salt, and afterwards spit into the eye of the animal. Lucius Vitellius, brother of the Emperor Aulus Vitellius, had some good qualities, but he was depraved in consequence of his passion for a freed woman, whose saliva he swallowed mixed with honey, for an affection of the throat, and this was not done secretly nor rarely, but openly and daily.

Rock dust with saliva constituted an amorous philter. So in the *Sityricon* of Petronus we see one of the actors of this scarcely moral Roman, relate a scene which passed between him and an old sorceress, with wine-colored skin and trembling lips. She was striving to restore strength and life to an exhausted libertine. The enchantress kneaded some dust with saliva, and taking this preparation upon the end of her fingers, in spite of the repugnance of the latter, who submitted himself to this operation, she branded him with it upon the forehead. She then invoked Priapus and directed her patient to spit three times,

and to throw into his bosom as many times some little pebble stones, enveloped in purple. The effect of this magic charm was surprising.

I do not know how to form a judgment upon the virtue of saliva; but the Evangelist cites the fact of the cure of the man who was born blind by means of a little dust mixed with saliva. It might be objected that this was a miraculous cure, but the employment of this mixture before the public seemed to me to indicate that this was a usual practice in olden times. However this may be, faith in the virtue of saliva had not entirely disappeared even fifty years ago, for I read the following in the 49th volume of the *Dictionum des Science Medical*, 1820: The external use of saliva has been known for many centuries. It is considered detersive and resolutive. Some authors, according to Galen, say that it cures some eruptive diseases by rubbing and anointing them with the saliva of a fasting man. There are physicians who have recommended in pustulous erysipelas the roots of borage masticated while fasting; they have also said that erysipelas moistened from time to time with saliva will not continue. They equally recommend for incipient albugo in infants, the application to the eye of ammoniacal gum masticated by a healthy person whilst fasting. It is certain from experimentation, says *Antoine Nuck*, that if, every morning for several days in succession, one anoints with saliva corns and indurations of the feet, they will be softened and will easily disappear. It is said that warts disappear in the same manner. Moreover, they add that by rubbing in the morning a place attacked with gout, with one's own saliva, it will prevent the return of this affection. If one rubs often the nodes and ganglia of the wrist they disappear. Wheat masticated will, mixed with saliva and applied to boils, cause them to ripen. To efface child-marks it is recommended to use saliva every day. The itch, slight burns, and a great many diseases of the skin, we are assured disappear by the application of saliva. Certain ulcers also are cured by the use of saliva alone. Animals, and especially dogs, cure their wounds very promptly by the frequent ablutions of saliva which they make upon the sores by licking them with their tongues. The deposits which are formed in the ears do not resist this remedy.

For my part I would not dare to guarantee the efficacy of the saliva in all of these diseases, but I believe that in some of them it may, perhaps, often be useful. I have no comments to make upon this passage, extracted from a scientific medical collection, and I shall address myself simply to those who will honor me by reading it, in asking what they think of the above-mentioned document of Mr. Ribes.—*Lyon Med.*

THEORIES AND THEORIZING.

BY W. H. BARKER, PELLA, IOWA.

As students and practitioners of Dentistry, we claim much for our profession as an abstract science. A mere cursory view of the subject certainly allows no other conclusion, yet if we attempt to penetrate into the science beyond the mere external surface, we are befogged at once. In proof of this, we need only refer to the vast amount of theory and theorizing that meet us at every step, and stands out most glaringly on every page of our dental literature. Scarcely any two writers, or investigators, agree on more than the minor points of any particular subject on which they may chance to spend the force of their arguments. They enter into a subject with great earnestness, prosecute their work with zeal, labor hard, and too often bring forth only theory. For often, what one asserts to be light and truth, and brings forth very plausible arguments to sustain his position, another more indefatigable worker, who has penetrated, perhaps, a little further beyond the vail, shows to be untenable ground, and brings forth a new theory—very nicely bolstered up with what seems to be sound argument—which, in turn, proves to be fallacious. And thus it is—all having their day of glory, and many their day of death.

Not only do we see this disagreement among investigators and writers on dental science, but the same thing is equally or more evident in dental practice. We have not, as a profession, arrived at a standard in this direction; or if we have, fail utterly in putting it into practical operation. As evidence of this, take the proceedings of any dental convention, association, or society; sum up their arguments on any one point you choose, and if you do not get befogged you certainly possess an erudite

mind that few mortal men are heir to. Instance, as to cleansing teeth: one man, who has a widespread reputation for skill and ability, advocates in glowing terms the use of acid, and boldly asserts that no harm results therefrom; whilst his brother practitioner, of equal skill and learning, takes the ground that such practice belongs to the dark ages, and warns all to beware of its dire results. Each has his theory, and each claims he is right, and fights it out on his own line. Again, one asserts that a tooth should never be extracted, and that to do so is an unpardonable sin, whilst hundreds of skilled dentists all over the land assert just the opposite, and practice it every day. "Who shall decide when doctors disagree?" Next, as to filling, we are equally at variance, and we can find advocates of as many different theories and modes of practice as we may choose to listen to. One advocates gold, and gold only; another says: "use amalgam, and use it freely"; whilst a third uses both, and adds the cements, claiming that he cannot get along without them; whilst the fourth one says: "Do not fill at all, but extract all teeth that are carious." Most of us will call the latter an old fogy, but he is in our ranks, and has his influence nevertheless, as the many patients he dupes prove.

Follow the host of writers, who tell us how to treat dental abscess, pericementis, and the various diseases of the teeth and mouth, and we are at once out on the sea of theory and speculation, with no chart or compass to guide us through the breakers but our own good judgment. If theories and theorizing will do it, we are soon befogged, and the more we indulge in them the thicker grow the mists. We are often brought to think of this state of affairs, and realize its import, when urged by the best men in our ranks to educate the public, and especially our patients. When striving to impress certain truths on the mind of patients, who has not been met with contrary views, impressed on their minds by other practitioners? and as first impressions are always the strongest, you find it a hard task, and frequently you only befog your patient, as he is in a quandary to know who is right and who is wrong in the matter. When we arrive at a standard, and can lay aside our befogging theories, then may we hope to accomplish much in the direction of educating our patrons, and also the public, but not till then.

But this is but a single phase of this evil, for it keeps us vacillating as a profession; and whilst vacillating, not scientific, or successful, in the true sense of the word. For to be scientific, we must follow what science teaches; and to be truly successful, must follow her unvaryingly. Let us each walk in the light we have; advance as we may have more revealed to us; follow that which judgment dictates, and science has proven true; do that which we know we can do well and honestly; silence theories and theorizing, and we shall never become entirely befogged, be the mists ever so thick in our pathway.

October 24, 1872.

TOPEKA, KANSAS, October 19, 1872.

DEAR SIR: Will you allow me to trouble you for a little professional advice? Some two years ago a gentleman came to me to have some teeth filled. Among others that were troubling him, were the right inferior second bicuspid, posterior proximate surface, and right inferior first molar, anterior proximate surface. Both cavities had been filled with amalgam, several years previous, by a dentist of good reputation, who told him that he would be compelled to lose them soon. Upon examination, I found both teeth decayed around the fillings; they were very close together and sensitive; edges quite frail. I told him I could remove the amalgam and refill them with gold, which would relieve him. He consented. I removed the amalgam and all the decay perfectly, and filled with gold foil. He had a very "wet mouth," but I succeeded in getting them filled. But, oh! the sensitiveness was worse than before. He paid me $3 apiece for the fillings—$6; my price at that time. Sensitiveness continued; could not eat "syrup" on that side of his mouth. He called in several times to complain, and have me examine them, to see if they were perfectly filled. Each time I told him they were, and thought it was from exposed dentine near the gum, as he could not endure the slightest touch in that locality. By the way, his teeth were all alive with a morbid sensitiveness in preparing any cavity to fill. Such *very sensitive* teeth it has been my good fortune to find very seldom. Well, he has suffered for two years, but his suffering has been confined to such times as eating "syrup" or picking his teeth.

To-day he came in, resolved to have them refilled. I put on my rubber dam, wiped them dry and examined again. Sensitiveness seemed to be on the exposed dentine. I now removed the filling, first from the molar; cavity looked clean and perfect; no decay since I filled it. I now removed the filling in bicuspid, and found a little decay under the filling, then a layer of dentine, and a small cavity under the edge of the gum. I now cut the cavities of both teeth below where the edge of the gum will come when the rubber is off, and filled with gold in such a manner as to cover all the exposed dentine. I worked hard four hours and twenty minutes. I now stood looking at my work triumphantly, feeling that I had mastered the thing; it can't help but prove a success. The patient says, "they look nice, but I would not go through with that operation again for $100. Well, Doctor, what do I owe you?" I reply, that it is worth $15; but as I filled those teeth once before, and you have suffered so much with them, I will only charge $4 each, making $8. That will make your work done on those teeth—two years ago and now—cost you $14.

Was I under any obligation, either lawfully, morally or professionally, to have done this work to-day for a less amount, or do it for nothing? Or, was I under any obligation to deduct even the $6, I had before charged him? What would have been right in the case? You shall be the judge, whether or not he suffered for the last two years on account of lack of skill of the operator, or from an unfortunate, morbid, sensitive condition of his teeth? The operation, as I first performed it, was as I now would do for any patient, and such as is commonly done by good operators.

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Is it common in city practice to warrant fillings? If so, what do they warrant them to do?—to simply remain in the tooth or to give satisfaction? I have written this because I want to know what the custom of *good* operators is, generally.

Very respectfully, yours, A. M. C.

P. S.—The pulps were not exposed, nor do I consider any danger in that direction.

ANSWER.

It is not the *custom* among first-class dentists in this city to *warrant* operations on the teeth. A warrantee would be quite

as improper in the practice of a dental surgeon as in that of a physician or general surgeon. C.

[*From the Physician's Monitor for 1872.*]

ON THE USE OF THE LACTO-PHOSPHATE OF LIME, AS AN ANALEPTIC MEDICAMENT IN ADYNAMIC FEVERS, AND IN CONVALESCENCE.

BY DR. R. BLACKE, LAUREATE OF THE MEDICAL SCHOOL OF PARIS, ETC., ETC.

(Translated from the French.)

In a great number of acute diseases, especially in typhoid fever, typhus, and certain forms of pneumonia, we often notice a condition of considerable adynamia, which takes its origin either in the peculiar character of the malady or in the constitution of the patient, and is constantly attended by a marked rise of temperature. This latter phenomenon may be rationally explained by an unceasing and general process of denutrition of the tissues. Indeed, it is well known that all molecular changes in the form or composition of the constituent parts of the organism are attended with a disengagement of heat, and that these physiological manifestations are under the control of the ganglionic nervous system.

Every substance whose action tends to induce a sedative influence upon this nervous system may, therefore, by suspending or diminishing combustion, lower the temperature and oppose the progress of spoliation and of weakening of the organism. It is chiefly through a sedative action on the ganglionic nervous system, that we see medicaments apparently so diverse, like alcohol, coffee, cocoa, and even arsenic, produce beneficial results —act, so to say, the part of anti-deperditors, and respond to that clear and precise indication, the removal of adynamia. Such is, I think, the reason of the undeniable success of alcohol in certain forms of acute affections.

But even where the acute condition of the disease no longer exists, there subsists during the period of convalescence a general atony, proportional to the gravity and duration of the febrile state which had brought on a period of arrest in the phenomena of nutrition of the tissues. Several months may then pass on before health is re-established, if, indeed, it is ever entirely recovered; and we all know how essential it often is to

institute a prudent and rational treatment at the termination of an acute disease, in order to prevent it from passing into the chronic state. With the view of warding off such results, I put the question, whether it would not be more rational to resort in such cases to agents capable of arousing, in the organism, the entire energy of the nutritive functions; and a substance fulfilling this indication, I believe, is to be found in the phosphate of lime, combined with lactic acid, a preparation already known in France by the name of "lacto-phosphate of lime."

I was led to the employment of this salt, by the physiological study of its action in all living organisms; for it is not only in animals, but also in an equal measure in vegetables, that its action is powerful; since, a long time ago, botanists had stated that the ligneous skeleton of plants contained but insignificant proportions of the lime phosphate, while this substance was constantly found in the soft and nitrogenous parts of the plants. They had shown that the very existence of albuminoid substances was linked with the presence of the phosphate, and was everywhere found in direct ratio to the quantity of this agent; so that the more strongly nitrogenated vegetable food was, precisely the more phosphates it contained.

They had found this substance in great abundance in the buds and growing leaves; they had seen it decrease in the fully developed organ, and find its way to the grain, where it became concentrated in view of the future development of the embryo. It is furthermore known that when a grain is deposited in a situation deprived of phosphate, it produces a plant, the development of which will continue only until the entire quantity of lime salt primarily contained in the grain shall have disappeared. Now, if we proceed to investigate the action of the phosphates in the animal kingdom, we shall find identical phenomena.

I may recall the fact that in the pregnant woman, we see, at the end of a few days, the phosphates disappear almost completely from the urine and excretions; whereas in the pelvis, and often in the cranium, are formed osteophyta, destined to disappear toward the latter months of pregnancy, or at the beginning of lactation. It can scarcely be questioned that these phosphates are wholly absorbed for the formation of the skele-

ton. Boussingault, in a series of exact experiments, which can not be too highly commended, has shown that young animals take up much more of the phosphates than are required by the development of their bony tissues alone. Besides Boussingault, Lehmann, Mayer, and other chemists and physiologists have shown in these cases also the strict correlation which links the presence of phosphates with that of nitrogenous substances, and the concentration of this salt in all organs which are going through a process of development; and they have announced the opinion that phosphate of lime is indispensable to the organization of albuminoid substances into cellules.

In order to obtain a correct knowledge of the action of the lime-salt upon nutrition, I carefully submitted a pigeon to the test of taking food which was almost deprived of phosphate of lime. It soon lost all its liveliness, its appetite, a notable portion of its flesh and weight, and it excreted more of the phosphate than it absorbed. At the same time, the muscular and fibrous tissues diminished as rapidly as the skeleton. The addition of the phosphate to its ordinary food soon brought back its normal condition. It may also be proper to mention a fact which, though well known, had not until now been elucidated: that the vital activity of animals and their temperature are proportionate to the quantity of lime phosphates which they retain; so that from the bird to man, and from man to the mollusk, the quantity of this salt follows a descending course.

The lime phosphate, as has been seen, plays an important part after its absorption, and when it is carried with the albumnoid substances through the circulatory torrent into the intimate recasses of our tissues. But that is not its only action. It is found in abundance in the stomach, and forms an essential part of the gastric juice; whilst its action on the digestion of food is such that Blondlot considers the phosphate of lime to be the truly active element of the gastric secretion. And I may indeed even now assert the fact, that excitement of the appetite and facility of digestion constantly and quickly result from the ingestion of lacto-phosphate of lime.

Such is, I believe, the uniform action of this substance, as investigated in the animal and vegetable kingdom. It is scarcely needful here to refer to the use to which agriculturists have

turned these notions, in composing phosphated manures, or to the success which has justified their applications.

How is it that, in man, the same favorable results have not been seen to follow the employment of the phosphates, even in cases where they seemed to be most clearly called for? I mean rickets, osteomalacia, and fractures of bones. A great many physicians had been led, indeed, to employ them in these cases, but never with the realization of those marked and precise effects which had been expected.

The failure of these attempts is satisfactorily explained, when we observe that the preparation invariably prescribed was the pulverulent phosphate of lime, of which lactic acid is the natural solvent. Now, this latter substance enters only by two thousandth parts into the composition of the gastric juice. It could, therefore, transform and render absorbable only a very limited part of the ingested salt; whilst the remainder, dissociated, reduced to an imperfect powder, passed with the food into the intestines, and then produced constipation and, consequently, an arrest of all organic functions, the ordinary result of this pathological condition.

It was, therefore, necessary, in order to obtain the beneficial effects of the substance, to introduce with certainty into the economy, large quantities of perfectly dissolved phosphate of lime.

It was in 1868, that Mr. Dusart and myself, after having investigated with care the phemomena of the digestion of phosphates in the stomach, were led to reproduce a substance representing exactly the composition of a portion of bone rendered soluable and easily absorbable.

I have thought it necessary to enter into all the above details, because the facts which they involve, if they were not unknown, had at least passed without much engaging the notice of the profession; and because there had been no explanation of these physiological results.

It seems to me that, now, it will be easy to understand how in convalescence, and in acute affections of an adynamic form, the functions of nutrition are restored; how, after easy digestion, the assimilation of food is secured, and fills up the gaps

produced by disease, or arrests denutrition caused by grave fevers, substituting in its stead a contrary movement.

The lacto-phosphate of lime is at once an aliment, or article of food, and a medicament of the highest value. Its administration can not, like that of alcohol, produce mischievous consequences; and it never depresses the nervous system charged with presiding over the transformation which take place in the nature or form of the elements of our tissues.

To illustrate the action of this preparation, Dr. Blacke has reported a number of cases in which it was entirely successful, and among which were those of youths whose development had become suddenly arrested. He says, "There is no physician who is not frequently placed in presence of similar facts, having to attend children who, during the process of dentition or the various critical stages of development, and especially puberty, present an indifference to, and sometimes a deep disgust for, all kinds of food; atony of all the tissues; and often diarrhœa or constipation, resulting from this state of things. Now, we all know how difficult it is to treat such cases; for the condition of the alimentary canal no longer allows the patient to tolerate cod-liver oil, the nutritive and excitant qualities of which would otherwise render it so valuable; and, on the other hand, tonics of all kinds but too often prove of no effect.

"The preparations of lacto-phosphate of lime, on the contrary, being extremely palatable, are readily accepted by all the young patients; and the cases which I have just related may serve as a common example of the effects which are obtained through their means, and which are explained by their action, both as chemical agents and as excitants of nutrition.

A CALCIFIED PULP.

BY W. H. BARKER, PELLA, IOWA.

Mr. M., aged about fifty, called to consult about his second inferior molar, which was giving him a good deal of trouble. Found the tooth much worn down by mechanical abrasion; pulp cavity entirely obliterated, calcification having taken place, and the calcific deposit occupying the whole space usually filled by this highly sensitive organ. Hypersthesia exists to such

an extent, that merely the touch of the tongue is, at times, almost unbearable; and yet, strange to say, patient bears the tap of an instrument without a flinch. What, then, is our surprise at this state of things: a pulpless tooth; tissues surrounding it in a healthy, normal condition; no periodontitis, or abscess, and yet almost constant pain. There must be a cause. What can it be? Is the tooth sensitive to thermal changes? Patient replies, that it is slightly so—more to cold than to heat. There must be the remains of a nerve somewhere, and we conclude to hunt for it. Observing that a small brown spot occupies the center of the new deposit, take a drill and follow its direction toward the canal of anterior root, and after cutting down into it quite a little distance, find the object of our search. Apply nerve paste, with instructions to patient to return unless pain ceases. Returns in a few days, saying pain has not been so severe, but is still troubled a good deal, and cannot yet use the tooth in eating. Conclude to hunt for the remainder of the nerve in the posterior root canal, and, after considerable cutting, find it, though but a moiety, same as in the anterior root; adopt same treatment; pain ceases, but tooth remains sensitive, after devitalizing and extirpating what little of nerve tissue that could be found. Put in temporary stopping, after one or two applications of Glycerole of Thymol, and in about three weeks from last application, patient calls to say, that he can crack a grain of wheat on his tooth; has no pain; tooth only a little sensitive, and that gradually disappearing. About one week later, fill, and dismiss the case, cured, much to the patient's, but more to our own satisfaction—since we have conquered a hard case, learned a most valuable lesson in diagnosis, robbed the forceps of what might have proven its legitimate dues, and saved a most valuable organ to my fellow-man; and, if by writing this, we can persuade any brother practitioner to go and do likewise, our labor will not have been in vain.

November 2, 1872.

RUBBER DAM.

When the rubber is inclined to pull over the thread, make knots in the thread, close together, to correspond with the free surfaces of the tooth. The small part of the thread can be passed *between* the teeth, and the knots then give us the same advantage that a larger cord would possess. CHASE.

Mechanical and Miscellaneous DEPARTMENT.

IS DENTAL CARIES THE RESULT OF CIVILIZATION?

BY J. M. WHITNEY, D. D. S., HONOLULU.

Six miles east of Honolulu, over bleak lava hills, there is an ancient burying ground, which is always an object of interest to the curious. It is so old that there is not even any tradition of its origin, and the fact that it is located several miles from any considerable settlement of natives, shows that it must have been used as a burying place many years ago, when these islands were much more populous than they are now. Some have supposed that it might have been a battlefield, from its location and the great number of bodies buried there, but as we find the skeletons of old men, women and children, and as some of the bodies are found buried in the ancient manner of interment—sitting erect, with the knees drawn up to the chin, and the hands clasping the limbs, showing they must have been carefully deposited—this theory cannot be maintained.

These skeletons are found in a space of, perhaps, two miles long by half a mile wide, in the deep sand of the beach, close by the sea. The trade winds, which almost constantly blow over the place, have piled the sand in hillocks much like the snow drifts of a colder clime, and these drifts are constantly shifting and changing, so that which at one visit may be buried several feet deep, at another may be exposed to view. The burning rays of a tropical sun falling for years, perhaps for ages, upon these bones, have bleached them to an ivory whiteness.

There is another ground similar to this, but several times larger, at Waimanalo, about fifteen miles from Honolulu, and I have visited several other smaller ones, upon this and upon other islands of the group. To me these burial places of a for-

mer generation, are not exceeded in interest or suggestiveness by any of the many interesting objects in this country. They present an opportunity, which few are so fortunate as to obtain, of studying osteology, and especially the dental structure of the children of nature,—for no one can doubt that here, at least, we can observe the effects of a wholly natural life, unrestrained and unimpaired by the so-called evils of civilization. I searched with eager interest among these pre-historic relics, to learn, if possible, their teachings upon the subject of dental caries, which from the time of the earliest writers upon odontology until now, has been the source of much learned discussion. From all that I had previously learned, I felt sure that here, at least, I should find comparative, if not perfect freedom from carious and other affections of the dental organs. But, to my great surprise, quite the reverse was true. I found not one in fifty, perhaps a still less proportion that did not exhibit dental caries, which made its attack upon the teeth in the same manner and places as we now see it. A much larger number were affected upon the grinding and gingival, than upon the approximate surfaces, but these latter were not rare. Many were nearly or wholly without teeth, and their loss was apparently caused by caries attacking them at the gingival surface; others, by the extensive absorption of alveolar process, showed that a dental abscess with its torturing, long-drawn-out pains had been there. Others, still, by a large accumulation, of salivary calculi, proved what a foe it was to the health of the alveolary process, and consequent stability of the teeth, as it is at the present time. I have found temporary teeth occupying the place that should have been given to the permanent teeth—the permanent not making their appearance, or, if so, in an abnormal position. In short, upon those whitened fields may be found every form of oral disease that records itself upon the denser tissues with which we are now acquainted, and that not as the marked exception but as the general rule.

Shall we say, then, that dental caries is an ill introduced by our civilization—the result of hot food, hot drinks, acids, alkalies, and similar causes—and that we have but to return to primitive habits to bring relief to ourselves and our children? Let such a theorist spend a few days among these deeply inter-

esting burying places, and I think he will be forced to entertain different views. It is not only among the dead but among the living natives, of these and other islands of the Pacific Ocean, that I have had frequent opportunities of examining the teeth; and it is the rare exception if I find one whose teeth are perfectly formed and preserved. With all this, nature has been very kind to them, for rarely if ever do they suffer from acute odontalgia. During my residence of over three years, I have not once been called upon for relief, except from alveolar periostitis, and this is comparatively rare. I think the explanation of this lies in the fact, that they feel pain less keenly than those who have been longer under the influence of civilized life, hence the exposure of the dental neve is not followed by the intense pain known to us.

From my own experience and observation, I have little hope that plain and primitive modes of living are, of themselves, sufficient to give strength and stability to our teeth, and those of our children. This must be done, if it is done at all, by careful attention to hygienic laws, by early and persistent attention to their cleanliness, and the most thorough and concientious labors of the educated dentist.

THE RUBBER QUESTION.

In reply to many correspondents asking for advice in reference to a settlement with Mr. Bacon, we answer, we have no advice to give. We will tell you what we know about the rubber question, and then you must act for yourselves. For ourself, if we felt compelled to use rubber, we should settle with Josiah on the best terms we could, and take out a license to save cost and trouble, provided that we could do so without entering into bonds to recognize his claim as valid, and his right to tax us for the use of the Goodyear patent, which the law has declared to be public property by expiration of the term of patent. The claim which he sets up, and requires his licensees to bind themselves to respect for all time to come, is simply ridiculous, as will be seen by the following extracts taken from a license recently issued to a dentist in this city:

WHEREAS, —— of —— county of —— and State of ——is desirous of acquiring the right, privilege, or license of using the inven-

tion of said Nelson Goodyear, and the invention of said John A. Cummings, and of working the said process and using the said substance for making artificial gums, or plates for artificial teeth, according to the specifications of the letters-patent, above described; it being hereby expressly admitted, declared and agreed by the said —— that each of the above mentioned patents, under which the license hereinafter mentioned is granted and received, is valid and effectual in law to secure that exclusive right which each purports to secure. * * * * * *

Second. That the party of the second part shall not, by himself, his agents or servants directly or indirectly, practice said inventions, or either of them for, or vend said substance or said plates or gums, *for, or to other dentists,* nor in any way, except in his own business, and for his own patients.

Third. That the said party of the second part shall in no manner, countenance or encourage infringements on either of the patents or inventions, above described, but shall at all times recognize the validity of said patents.

Fourth. That whenever said party of the second part shall furnish full and sufficient evidence, and produce the affidavits of witnesses, that any dentist in the city or town where the party of the second part resides, is infringing said patents, then the party of the first part shall commence proceedings against such infringing party, if he can be discovered, and prosecute the same in a reasonable manner, and by all reasonable and proper means.

* * * * * * * * * *

For the true and faithful performance of *every covenant herein contained,* the said——for himself, his heirs, executors, and administrators and assigns, does bind each and every one of them unto the said party of the first part, and their successors and assigns, in the sum of one thousand dollars, of lawful money of the United States, liquidated and agreed damages.

If the use of rubber compelled us to subscribe to such an infamous document, we should most assuredly have nothing to do with it, but, judging from the past acts of Mr. Bacon, we do not think that he would refuse to receive your money or recognize you as a licensee, on the ground that you refuse to sign this license and agreement, which he has so ingeniously prepared.

In regard to substitutes for the rubber, our readers know pretty much all that we do. The celluloid is used by some, it is claimed with success. With us it has not proved itself equal to rubber in all cases. It may do very well for temporary work. The coroline is a base similar to the celluloid, and is worked in the same manner. We have been more successful with this than with the celluloid. It seems to answer a very good purpose for temporary work, but we do not regard it as equal to rubber, especially for partial plates. What we regard as the best substitute yet offered is the alluminium plate, with rubber attachments. This style of work has been in use for several years. There are several methods of making the attachments, all of which we believe have been patented. Of these different methods, we regard that of etching the plate, patented by Dr. Clark, of Galesburg, and that of making a series of holes through the plate, countersunk on the palatine surface, patented by Dr. Rodgers, as the best. We know nothing of Dr. Rodgers, or his claim, or whether he regards it of value enough to have it respected. Dr. Clark, we are informed, is asking $75 for an office right the whole term of the patent. The Doctor paid us a visit recently, and showed us his claim, and stated that he had examined the patent office records himself, and was confident that his claim was just and true, but we are under the impression that plates were put up on this method at least two years prior to the date of Dr. Clark's patent—1869. We saw a plate in 1867, which was made in Philadelphia, and which the lady said she had worn for over one year. Her husband informed us that the method of attachment in this case, was patented by a Dr. Asie. We are under the impression, also, that some dentist in Illinois told us of his repairing a plate, which was put up in this way, in Philadelphia, in 1865. If we are correct in these statements, Dr. Clark can hardly claim to be the first inventor of this mode of attachment. We would be glad if some of our readers would enlighten us upon this subject. Who made these plates in Philadelphia; whose method was it, and was it patented? This work does not in any way infringe upon the Cummings' claim, as will be seen by reference to the patent which we published in the last number of the journal.

Gutta percha has recently been introduced here in St. Louis, as

a substitute for rubber, with every prospect of success. It is thought that the use of this substance does not in anyway infringe upon the Cumming's claim; his claim being for rubber, or vulcanite, which according to our text books and Webster, the recognized authority in our courts, is *rubber* vulcanized. Gutta-percha is worked in the same manner as the rubber, and cannot be distinguished from it when the plate is completed. We know nothing of its durability. We find by reference to some of our old journals that it was used at one time, prepared in a similar manner, but it was not thought to be durable. We see no reason why it should not be as durable as the rubber.

In regard to the status of the rubber question, we can say that the ball is in motion. The National Association, at its meeting at Niagara, appointed a committee to take the matter in hand. This committee is composed of men in our large cities well known to the profession, and they have gone to work in earnest. We have been informed by the chairman, who resides in St. Louis, that everything is being done that can be, to bring the matter to a successful issue at an early date. We are not at liberty to state what they are doing further than this; leagues are being formed in each State for the purpose of raising funds to defray the expense attending the prosecution of a case when it shall be brought to an issue, and we ask the hearty co-operation of every individual member of the profession, when applied to for aid by this committee, with the assurance that they will be justly dealt with, and that the money contributed will be expended to some purpose. We know the men who have this matter in hand, and feel confident of the result. St. Louis is doing her share, and we have no doubt but others will follow her good example so soon as an opportunity is offered. We shall publish in the succeeding number the form of the League.

EAMES.

The above should have appeared in the October number. We now add a word in reference to the new candidate for dental favor—gutta percha. It has been in pretty general use by the profession of St. Louis for the past month, and thus far seems to give general satisfaction. The only objection urged against it, is its liability to be porous after vulcanizing. This seems to be due mainly to the presence of water, for if the moulds be

dried out, and the gutta percha packed with dry heat, there is little trouble from this source. It requires less time to vulcanize it than the rubber; in the Hayes vulcanizer, twenty-five or thirty minutes at 320 degrees, being sufficient time—more than this renders it brittle. We have no doubt about the success of this material, and believe that after a little experience in the manufacture and the mode of manipulating, it will prove equal in every respect to the accursed rubber. The committee on the rubber question are anxiously awaiting the result of the Gardiner case, which has been brought up for a re-hearing in the Supreme Court, before taking any further action in the matter. So soon as this case is decided, we may expect to hear from them.

BIBLIOGRAPHICAL.

Pathology of the Teeth.

BY CARL WEDL, PROFESSOR OF HISTOLOGY IN THE UNIVERSITY OF VIENNA.

[Translated by W. E. Bordman, M. D., with Notes by T. E. Hitchcock, M. D.]

We received the above named book from the publishers, Lindsay & Blakeston, of Philadelphia, some weeks since, but have refrained from noticing it until now for reasons which may be readily understood. The work is upon a branch of study which has been too much neglected by the dental profession, and is of too much importance to be passed over with a hasty notice.

As regards its scientific character, it is probably equal to "Tomes' Dental Surgery," which has heretofore held a position which, in this respect, had been attained by no other work upon our specialty. One fact must be kept in mind in considering this work: it is not the work of a practical dentist, but he states that it was his endeavor "invariably to keep in mind the requirements of the dentist," and in many of the labors and experiments which were necessary for the accomplishment of the work he was assisted by dental practitioners.

The first part of the work is devoted to anatomy and physiology principally. The histological characteristics of the teeth, gums and periosteal structures receiving considerable attention, as well as their histogenetic peculiarities. The description of the development of the teeth is not so clear as Waldeyer's, though both quote from Tomes and Marcusen, as well as Kol-

liker and other authors, and in their principal points do not disagree very widely. Waldeyer, however, is much more prolix and minute in his description of this process than Wedl, though the latter, we think, is sufficiently explicit to serve his special purposes.

In the second part the irregularities of the teeth receive the first attention. These are treated of under the heads of irregularities in size, number, arrangement, position and structure. Under the latter head, the influence of hereditary syphilis upon the structure of the teeth is discussed at considerable length.

Inflammation of the pulp, gums, periosteal structures and caries of the teeth, are treated with much care, and there is abundant evidence of study and investigation throughout the work. The scientific character of the work is in striking contrast with the majority of those which have heretofore appeared upon any subject immediately connected with the specialty of dentistry, whilst it is the only one which has been particularly devoted to the pathology of the teeth.

The chapter upon the theory of caries, translated by Dr. Koch of Chicago, we published several months since in this JOURNAL, and it can speak for itself as to the views of the author upon this subject. The chapter upon new formations is prolix and exhaustive, giving the most precise and reliable description of the dentinifications and ossifications of the dental pulp, which we have met with. Exostoses of the roots are also treated of, with like ability. Cysts of the jaws, or, as they have been called, cystic tumors of the jaws, receive but little attention. They are rather rare, and little is known in relation to their cause, and the treatment of these cystic formations differs considerably among different practitioners. We have seen one clearly marked case in a child of three years. In speaking of the "green deposit," or green stain, found upon the incisors following the lunated margin of the gums, he says, it "cannot be washed off in water, nor wiped off, but must be scraped off with a sharp knife, when the enamel will be found bright and intact." He says, also, "I have never observed a penetration of the green granular mass into the peripheral enamel layer." This, we imagine, would not accord with the experience of most dental practitioners who have given this subject special attention.

The author's explanation of the formation of tartar, which he states "is formed in greater abundance upon the facial surface of the upper bicuspids and molars," and which he accounts for by "the fact that Steno's duct opens directly opposite the second *bicuspid*, will need some revision.

The chapter upon the neuroses treats at length upon the causes of dental neuralgia, and some theories are propounded which will require more testimony in their favor than has yet been adduced, before they will be generally adopted by the profession—though, upon this subject, this author is much more philosophical, and we imagine much nearer correct than Anstie, with his startling hypothesis regarding the atrophies of the spinal nerves. One point deserves special attention: He considers the extraction of teeth as a special exciting cause of neuralgia. Gross has reported several cases where severe neuralgias had their origin in the aveolar process when teeth had been extracted, and which were cured by cutting out the portion of the process where the pain originated. We can easily imagine that nerve fibres may be compressed by the contraction which takes place in cicatricial tissues, but these cases are undoubtedly rare. The author also says, that "after the amputation of limbs sensitive nerve tubes sometimes grow in large numbers from the ends of the divided nerves," and he thinks an analagous process may take place after the extraction of teeth which might produce a neuralgia. We are aware that neuromata also develop upon the ends of divided nerves, and give rise to neuralgic affections; but the neuralgias arising from all of these causes are undoubtedly much less frequent than those which arise from the irritation produced by fangs and teeth, which are nearly or quite deprived of their vitality, remaining in the gums or in their sockets.

Many interesting questions are discussed in this work, and generally with marked ability. It is well worth the attention of the profession, as it is by far the most valuable addition to our dental literature which has appeared for many years. J.

JOURNALISTIC.

Dr. Bennett calls attention, in the *Medical Record*, to the *role* played by *dust* in the production of catarrhs and other affec-

tions of the air passages. This is a subject that has hitherto received but little attention from medical men, and with the author of this article we have no doubt but that, in great cities particularly, it plays a much more important part in the production of disease than has generally been attributed to it. If city fathers could be induced to give a little attention to the welfare of the people, instead of devoting so much time to schemes for fillng their own pockets, and in providing for their political friends, we should hope for great improvement in the sanitary condition of cities.

Dr. J. H. Bell, U. S. N., proposes the use of the word carbol for carbolic acid, and supports his views with some very good reasoning. It is possible that this word may be adopted.

We also learn from the *Record* that there has been a death in Bellevue Hospital, lately, caused by the inhalation of ether.

In the *Cosmos*, Dr. Batchelder, of Salem, Mass., relates a case in which a partial upper gold plate, with seven teeth attached, were swallowed, and remained in the throat for fifteen months, being then thrown up during a violent fit of coughing. Reports of the California and Illinois State Dental Societies then follow, which we have published long ago, and which consequently need no comments in our JOURNAL. Short reports from several other societies follow, with the usual experiences with oxy-chloride of zinc, rubber dams, mallets, &c.

In the *Periscope*, we find the usual variety of selections from the medical and dental literature of the day.

In the *American Newspaper Reporter* we find the following: "Mr. H. W. Beecher gives some brief advice to those who write letters to busy people. 1. Don't write at all. 2. Where you can't help it, be sharp, short and legible. 3. When you write on your own business pay for the answer."

In the Boston *Journal of Chemistry* is a short article taken from the *Lancet*, detailing a plan of treatment for small-pox, which, it is said, has proved highly successful. It consists principally in sponging the patient in a diluted solution of carbolic acid once a day. The carbolic acid was diluted with glycerine in some cases, and soap-suds in others.

The Buffalo *Medical and Surgical Journal*, in an extract from the *British Medical Journal*, of a lecture delivered by the senior

surgeon of University Hospital, upon the use of chloroform, gives some good advice, as follows: "Never give chloroform without first thoroughly loosening the dress, and, if possible, not within four hours of a meal; the head should be moderately raised; pulse, respiration, and color of the face carefully watched." Fatty degeneration of the heart is undoubtedly the cause of many fatal cases. We would add one more caution to those above, and that is, don't give it at all. Whilst all of our best surgeons are giving less and less chloroform, and in slight cases refusing to give it, many dentists are still giving it recklessly for the extraction of teeth, and every once in a while we have a fatal case to record.

In the *Medical and Surgical Reporter* is recorded a case of epithelioma cured by external applications of creosote.

The September number of the *American Journal of Dental Science* has a report of the proceedings of the Southern Dental Association, which was held in Richmond last July. Dr. Gorgas read a report on dental literature, in which he suggested "that the Association take the *American Journal of Dental Science* under its charge and patronage. A committee was also appointed for the purpose of taking steps to endow one of the colleges in the South.

The *Dental Register* for October has a characteristic article by George B. Harriman. We would not refer to this at all were it not that such productions, when dental journals can be found to print and circulate them, are a lasting disgrace to the profession, and do much to neutralize the effects which might otherwise be expected to flow from the well directed efforts of educated and intelligent men. We shall not attempt a review of this thing, but he says, "the individuals who do not admit the existence of the axis cylinder, regard the white substance not only as the predominating constituent, but also as a really active element of the nerve contents." This is pretty good for one who *discards books and goes only to Nature for his lessons.* If he had not discarded books and spent a little time in examining authors, he would have found out that there were no such individuals among intelligent men, as he speaks of, "who do not admit the existence of the axis cylinder, &c." After arguing to prove what every one who had not long since discarded books already knew,

he says: "The axis cylinder would hence seem to be the real *electrical substance*, &c." This is something which he will certainly not find in books, and we are delighted to learn that the real *electrical substance* is the axis cylinder of a nerve fibre. Further on, he says: "The termination of motor nerves to muscle is by plexuses ramifying over and between the fibres of the muscles. In no case can they be seen to enter into them, &c." Now, we might almost be persuaded that the author had at some time departed from his determination to discard books, and had examined some author upon this subject, inasmuch as this accords with the opinions of the *older* authors, but it has nevertheless been clearly shown that the motor nerve fibres of muscles do penetrate the sarcolemma, as any one will see by examining Stricker's recent work on Histology. We are not prepared to say, however, that an acquaintance with books would improve the writings of *this* author, but we do think that usually writers are improved by some acquaintance, at least, with the literature pertaining to the subjects which they attempt to elucidate.

The *Western Lancet* returns again to the discussion of the question of expert testimony. It appears that the legislature of California has already passed an act which allows expert witnesses to collect fees for their services—the amount, however, is to be determined by the board of supervisors. This is, we believe, in advance of other States, when a professional man's property, that is his professional knowledge, which has cost him time and hard study and money, is supposed to belong to any one who sees fit to use it, free of charge. This is an outrage which belongs to the dark ages and should be abolished. If a professional man happens to know anything about the facts in a case he should be bound to attend court, and go on the witness stand like any one else, even though his time may be worth $10 or $20 per hour; but when the law allows any one who sees fit to compel him to give up his property for the benefit of another, without any compensation, it is simply absurd. It is just as ridiculous as it would be for a banker to be compelled to pay the costs of his neighbor's law suits because he generally has ready money by him, and can do it easier, perhaps, than the litigant. If the court or jury need light on any subject, let a man be called in

capable of informing them, and let him be paid for his services, but let the disgusting sight of experts testifying eagerly in favor of *their sides* in the contest, be classed among those enormities which civilization and christianity have for the most part made impossible in this enlightened age.

In the Boston *Medical and Surgical Journal* we learn of another new remedy principally used for liver diseases. It is called "Boldo," and comes from the land of cundurango, and will probably share its fate.

MINNESOTA DENTAL ASSOCIATION.

We are in receipt of a copy of the constitution, by-laws and code of ethics adopted by the Minnesota State Dental Association. We are pleased to learn of this organization of our Minnesota brothers; God speed them in the good work thus begun. We feel assured that, if they live up to the letter and spirit of the constitution, by-laws and code they have adopted, we shall soon see some of the fruits of their labors.

The second section of Article 1st of the Constitution states the objects of the Association to be, "to contribute to the elevation of the Dental profession in the State of Minnesota by encouraging a free and liberal interchange of opinions on methods of practice, and the literary discussions of subjects relating to Dentistry; to advance the standard of Dental Education; to promote the usefulness, honor and interests of its members; to enlighten and direct public opinion in regard to the duties, responsibilities and requirements of the Dental profession; and the maintenance of a high order of professional excellence among its members."

Active members are required to be men of good moral character, who have received a diploma from a respectable medical or dental college, or who have been three years in the practice of dentistry. Each member is required to support the honor and dignity of the profession, discharge the duties of a practitioner with fidelity and integrity, and observe the by-laws, rules, regulations and code of ethics adopted by the Association.

To Article 4th of the code adopted by the American Association they have added the following: "As members of the Dental profession do not practice the manipulations of a laborious art solely as a matter of sentiment, but as a high and honorable calling, in view of a support for themselves and their dependants; therefore it is understood that professional fees ought not to be delayed or long retarded, and that the general rules of business involving monthly payments shall control the rendition of fees for personal services rendered."

This last clause should be adopted by every member of the profession.

The next meeting of the Association will be held at Minneapolis, on the last Wednesday in June, 1873. Officers: President, Dr. D. C. Price, of St. Paul; Vice-President, Dr. J. A. Bowman, of Minneapolis; Secretary, Dr. C. DeMôntreville, of St. Paul; Treasurer, Dr. S. A. Beecher, of St. Paul. E.

THE BROOKLYN DENTAL SOCIETY.

The fifth annual meeting of the Brooklyn Dental Society was held on Monday evening, October 7, 1872; the President, Dr. A. H. Brockway, in the chair. After the usual preliminary and general business, the association proceeded to the election of officers for the ensuing year, with the following result:

President, William Jarvie, Jr.; Vice-President, A. N. Chapman; Recording Secretary, C. P. Crandell; Corresponding Secretary, C. A. Marvin; Treasurer, J. H. Race; Librarian, O. E. Hill.

The affairs of the Society were shown to be in a prosperous condition.

The *Dental Infirmary*, so recently established by the Society, is no longer an experiment but a pronounced success. Much interest has been manifested in the clinics at the Infirmary, many of which have been most instructive. The thanks of the Society were tendered to Dr. W. H. Atkinson, for the valuable services rendered by him in clinics the past year.

The meeting was one of interest and pleasure, followed by a sumptuous collation provided by the retiring President.

C. P. CRANDELL, Rec. Secretary.

NEW YORK OBSERVER.

Our old friend, the New York *Observer*, is to celebrate its fiftieth birth day by the issue of a valuable illustrated *Jubilee Year Book*, which the publishers propose to *send free* to every subscriber. The *Observer*, having completed its 50th year, bids fair, judging from the great success that attends its publication to lead the religious press for another fifty years. The *Observer* is associated with our earliest recollections of a newspaper, and we can safely say a good word for our old friend. It is a first-class family paper, and one that while in it will be found entertainment and instruction for every member of the household, will always tend to promote those principles that make valuable neighbors and good citizens. We advise our friends to subscribe for it, and secure the *Jubilee Year Book, gratis.* $3 a year. Sidney E. Morse & Co., 37 Park Row, New York.

The Missouri Dental Journal.

A MONTHLY RECORD OF THE SCIENCE.

VOL. IV.] DECEMBER, 1872. [No. 12.

[*From The Monthly Review of Dental Surgery.*]

ON THE DEVELOPMENTAL ORIGIN OF THE V-SHAPED CONTRACTED MAXILLA.

BY CHARLES S. TOMES, M. A., Oxon.

Lecturer on Dental Anatomy and Physiology, and Assistant-Surgeon to the Dental Hospital in London.

The very remarkable fact lately brought forward by Dr. Langdon Down, that the occurrence of the V-shaped maxilla is so constant in the mouths of congenital idiots that it is valuable for the purpose of diagnosis, naturally leads to the inquiry, at what period does this malformation originate? For as the narrowing across the region of the second bicuspids and divergence of the molar teeth behind them can only become marked when the permanent teeth are in their places, it is at first sight surprising that this character should be the mark of intra-uterine deficiencies.

The irregularities which are met with in the arrangement of the permanent teeth may be conveniently divided into two classes: those which result from causes in operation only during the eruption of the permanent teeth, and those which are due to abnormalities in the development of the jaws occuring at a very much earlier period.

The former may be termed mechanical or accidental irregularities, and affect the position of the crowns of teeth more than that of their roots, whilst the latter affect the whole alveolar portion of the jaw, and are due to more recondite causes.

Although this distinction has been recognized by most of those who have lately written on the subject of dental irregularities, it has hardly been sufficiently kept in view, and still further confusion has arisen from frequent misappreciation of the normal development of the jaws. In discussing the manner of origin of this particular malformation it will be necessary, therefore, to give a brief account of the method in which a normal jaw increases in size; but before doing so it will be advantageous to note under what conditions this V-shaped jaw is met with. The term "V-shaped contracted maxilla" has been applied to two somewhat different forms, namely, to jaws which strictly resemble the letter V in the figure described by the alveolar border, and to those others in which the alveolar border forms an angle in the bicuspid region, looking as if it had been pinched inwards at this point.

It is with this latter form that we are now most concerned, the most striking point, which is indeed obvious to observers other than dentists, being "diminished width between the posterior bicuspids of the two sides."

Some light is thrown on the present subject of inquiry by the conditions under which it is most frequently met with in adults. Thus, Messrs. Cartwright and Coleman report, that of 200 ancient skulls examined by them in the crypt of Hythe Church, there was not a single example of contracted jaw.

Mr. Mummery, in his very extensive series of observations, states that, "a reference to the teeth of savage races will show that irregularity is as rare as destructive attrition is common among them; whilst these conditions are precisely reversed with respect to the teeth of highly civilized peoples."

It was found by Mr. Coleman, that amongst the children at a charitable institution, a relation could be traced between the general appearance and the formation of the mouths; that is to say, on examining children of decidedly low, coarse aspect, contracted jaws were found only in from seven to eight per cent. of the number inspected; whereas, on selecting children whose appearance was unmistakably that which is termed "well bred," no less than 69 per cent. were discovered to have contracted jaws.

Most authors concur in attributing the contracted mouth in some manner to the effect of civilization, and in considering it to be in some measure an indication of physical degeneracy; but of late a yet more ominous significance has been given to its manifestations, namely, that it very frequently goes hand in hand with mental degeneracy.

Dr. Ballard remarks, "As in idiots are seen the worst forms of defective growth, so also do they exhibit the most aggravated forms of deformed jaws and teeth"; and Dr. Langdon Down, after examining the mouths of a very large number of the congentially feeble minded, was satisfied that there was always narrowing between the posterior bicuspids of the two sides and inordinate vaulting of the palate, the only exceptions being certain macro-cephalic idiots, in whom the mouth, like the rest of the cranium, was on a very large scale. So constant was this form of contraction that Dr. Langdon Down relies upon it as a very valuable diagnostic character for distinguishing the congenital idiot from one who has become idiotic in consequence of morbid changes ensuing at a later period. It is noteworthy that this narrowing across the region of the bicuspids is also very frequently observed in cases of cleft palate.

The problem the solution of which I propose to attempt is briefly this: a certain character, seemingly dependent on the presence of the permanent dentistry, is stated on the high authority of Dr. Langdon Down (this statement being confirmed by other authors), to be a mark of abnormal conditions occurring during intra-uterine life. The natural inference from this is, that the occurrence of this irregular adult dentition has been rendered inevitable by some developmental abnormality at a very early period; the question is, when does this abnormality in the growth of the jaws first arise? Should we find that it is a result of abnormal growth occurring subsequently to the birth of the child, then its very constant presence in the mouths of *congenital* idiots becomes perfectly inexplicable; on the other hand, if it be found to take origin from the period of intra-uterine life, it will be but one of those imperfect developments which, occurring in another organ, have led to the idiocy of the child. The explanations hitherto offered are somewhat various, but none of them are perfectly satisfactory. Thus Dr. Ballard

deems it a result of fruitless sucking, or of sucking the thumb; this, however, utterly fails to account for the hereditary transmission of the character, or for its association with other congenital deficiencies. Mr. Cartwright, whilst apparently recognizing that mechanical influences are insufficient to account for all the facts observed, nevertheless says that the forms assumed follow "the hereditary, congenital, or mechanical types"; and adds that congenital malformations of the maxillæ are abnormal forms *per se*, occurring usually without any hereditary predisposition, although they sometimes prove to be hereditary.

Mr. Oakley Coles, after quoting the opinion of Dr. John Smith, that the narrowing across the bicuspid region occurring in cases of cleft palate was an effort of nature at diminishing the defect, expresses dissent from this view and attributes it rather to the mechanical pressure exerted by the eruption of the molars. In support of this view, he states that the bicuspid region may be held to be the weakest part of the arch, so that a pressure applied from behind would, in the case of a perfect palate, produce bulging out; in the case of a cleft palate, a bending in of this region. He further says, that no such deformity exists in cases of cleft palate during the first dentition; a fact which, as we shall afterwards see, is susceptible of a different explanation.

The first step towards arriving at an understanding of an abnormality in the jaw is to obtain a peefectly clear idea of the normal process of its development; and although it would be out of place to enter at any length into the question of normal growth in the present paper, still it is absolutely necessary to briefly recapitulate the facts known about the increase of the jaws.

In order to estimate the relative increase of various parts, it is necessary to find some fixed point from which to take measurements, and such a point is found in the mental foramen. Exception has been taken to the assumption that this is a fixed point, but the objections raised can be very easily answered. No one supposes that its external orifice occupies precisely the same spot at all ages; on the contrary, it is well known that the jaw greatly increases in thickness, by additions chiefly made on its outer surface, and that it again wastes by absorption

from its surface in advanced age. But it so happens that these additions, which of necessity prolong the canal, do so, not in continuance of its former course, but in such a direction that the newly added portion forms an angle with the older portion.

Hence it is easy to trace how far the mental foramen has been moved, and to discover the spot corresponding to the termination of the canal in the nine months' fœtus.

It was shown, in the first instance by measurements made by my father, and afterwards experimentally confirmed by Professor Humphrey, that the enlargement of the jaw takes place mainly by additions to its posterior borders.

The important point for our present purpose is that the passage of the fœtal into the adult jaw takes place without any change of form occurring in that front portion of the arch which contained the temporary teeth; and I do not think that the conclusion that this portion of the jaw never undergoes any alteration *in form* (and but a slight alteration in size) admits of any question. Moreover, the prolongation backwards of the cornua of the jaw gives ample width without necessitating any change in direction.

Although the lower jaw has been selected to demonstrate these points, precisely the same is true of the upper jaw, in which the elongation backwards is effected by deposition on the maxillary tuberosities.

Now if the cornua of the foetal jaw present posteriorly a slight divergence (as is the case in normal jaws), it is obvious that their prolongation backwards will give increased width to the jaw, whereas, if they be parallel, no such increase will result from the prolongation.

But an increased width must be obtained in some way, in order that the maxillary bone may retain its normal relations with the other cranial bones, the cranial base having greatly expanded in the transverse direction.

Hence the new additions to the back of the jaw must take place, not as prolongations of the cornua in the same direction, but must form an angle with the portion already existing.

The explanation, then, of the angle formed in the bicuspid region, and the narrowing noticed at this point, I believe to be simply this: that the form of the jaw previous to birth is such

that its cornua do not diverge posteriorly, but are parallel: and as the portion of the jaw already formed never changes *its shape*, the newly added parts will pass off in divergent lines (forming an angle with that previously existing), in order to correspond with the increasing width of the base of the cranium.

If this explanation be true, the otherwise puzzling fact, that a character of the permanent dentition should be a mark of disease existing before birth, is fully accounted for; in point of fact, this peculiar malformation in the adult is nothing more than the necessary sequence of a malformation which occurred before birth, though at that time it would not be a sufficiently marked deformity to attract attention.

Several interesting subjects for consideration are suggested by the preceding observations: for example, there must be a reason why the V-shaped form is so rarely present in the lower, even when very strongly pronounced in the upper jaw.

If the upper be compared with the lower jaw, one point of difference is at once seen; in the upper there is nothing whatever behind the hindmost developing teeth, whereas in the lower there is a considerable length of bone behind the teeth which carries the condyle and the coronoid process. Hence the form of the lower jaw is determined, so to speak, in advance of the teeth, which, as they are added to the back of the existing series, come to occupy that part of the bone which was originally the base of the coronoid process. For, as Professor Humphrey has shown, the developing teeth at first lie under the base of the coronoid process, which progressively shifts its position backwards by absorption from its anterior, and deposition on its posterior surface, taking place. The direction of the cornua of the lower jaw is in this manner laid down for some little distance behind the region occupied by the developing teeth; and this involves of necessity the divergence of the two cornua, seeing that the condyles have to be carried outwards to articulate in their respective glenoid cavities. But there is no such provision to ensure the divergence of the alveolar borders of the upper jaw, seeing that these do not extend behind the developing teeth; and moreover, as a matter of fact, they do not diverge posteriorly at an early period. If the soft

parts be cleared away from around the lower jaw, and beneath the chin of a tolerably early fœtus,* so that the mouth can be viewed from below, it will be seen that the cornua of the upper alveolar borders are parallel, whilst in the lower jaw the divergence is very considerable; so that, supposing there had been teeth in the jaws, the posterior molars of the lower jaw would have passed outside those of the upper jaw.

This form of the jaws during fœtal life will, I think, serve to fully explain why it is that the V-shaped contraction affects the upper and not the lower jaw, and also to throw some light on those cases in which the lower teeth at the back part of the mouth are found to bite outside the upper teeth.

It is also interesting as seeming to indicate that, like the cleft palate, with which it is so often associated, the narrowing across the region of the bicuspids is, in a measure, the retention of a normal fœtal character.

Another question that arises is, by what means is the divergence of the cornua of the upper jaw effected? In the case of the lower jaw, it has been seen to be due to its articulation with the temporal bones, but in the case of the upper maxilla the agency is more recondite. Some light has, however, been thrown on this matter by Mr. Hilton, who has pointed out that the growth of the sphenoid bone is the chief factor in determining the expanse of the base of the cranium and the consequent enlargement of the maxillæ.

It is readily conceivable that an interruption in the normal course of brain development, such as may occur in the congenital idiot, will cause, or at all events be accompanied by, a corresponding interruption in the development of its bony case. If in this manner the sphenoid be hindered in its growth, and the lateral expansion of the basis cranii thus checked, the cornua of the upper maxillæ will remain parallel at a time when their divergence should have been accomplished. And it has already been shown that, unless the jaw assumes at the proper period the shape appropriate to its ultimate enlargement, this is

* Unfortunately, the jaws alone had been preserved in several of the specimens examined, so that I was unable to ascertain with any degree of certainty the age of the fœtus examined; judging from the size of the jaws, I should imagine them to have belonged to four or five months' fœtuses.

never afterwards rectified, but the angle seen in the bicuspid region remains as a permanent mark, stereotyping, so to speak, the check in development which occurred long before.

Whether this be or be not the true sequence of events which leads to the formation of the V-shaped jaw, it is at all events interesting to find that the origin of this malformation can be referred back to the period of intra-uterine life, and I am unable to see in what other manner its frequent association with congenital disease can be explained.

THE BRAIN DURING SLEEP.

Claude Bernard has recently contributed to the *Revue des Deux Mondes* a valuable paper "On the Functions of the Brain," which has been translated for the November number of the *Popular Science Monthly*. Sleep, as he remarks, "is rightly considered the state of rest of the cerebral organ;" and he proceeds to give the following interesting account of the experiments by which it had been proved that sleep is not the result of compression produced by the accumulation of blood in the brain, as was commonly believed until within a few years:

"It has been shown by direct experiment that, during sleep, the brain, instead of being congested, is on the contrary pale and bloodless; while in a state of wakefulness the circulation, becoming more active, provokes a flow of blood proportioned to the intensity of cerebral activity. In this respect, natural sleep and the anæsthetic sleep of chloroform are alike; in both cases, the brain, sunk into rest or inactivity, presents the same paleness and relative bloodlessness.

The experiment is made in this manner: A part of the bony covering of an animal's skull is carefully removed, and the brain laid bare, so as to study the circulation at the surface of this organ. Then chloroform is administered to produce insensibility. In the first exciting stage of the action of the chloroform, the brain is observed to grow congested and to lap over at the edges; but as soon as the stage of anæsthetic sleep is reached, the substance of the brain sinks in and grows paler, presenting a languid movement of capillary circulation, which lasts as long as the state of sleep or cerebral rest continues.

For the study of the brain in natural sleep, a circular trepan is made on a dog's head, and the piece of bone removed is replaced by a watch-glass carefully adjusted to the exact opening, so as to prevent the irritating action of the air. The animals subjected to the operation survive it; and observations on their brain through this sort of window, while awake and when asleep, prove that when the dog is asleep the brain is always paler, and that a fresh afflux of blood is regularly noticed on his awaking, when the functions of the brain resume their activity. Facts analogous to those observed in animals have been studied directly in the human brain. Upon a person injured by a frightful railroad accident, the effect of a considerable loss of brain-substance was examined. The brain was visible over a surface of three by six inches. The patient suffered frequent and severe attacks of epilepsy and coma, during which the brain invariably expanded. Sleep succeeded these attacks, and the cerebral hernia gradually subsided. When the patient awoke, the brain again projected and rose to the level of the surface of the external bony table. In the case of another person, injured in consequence of a fracture of the skull, the cerebral circulation was studied during the administration of anæsthetics. With the first inhalations, the surface of the brain became branchy and filled with blood; the flow of blood and throbbing of the brain increased, and then, at the instant of sleep, its surface subsided by degrees below the opening, while at the same time growing relatively pale and bloodless.

Briefly, then, the brain is governed by the common law that controls blood-circulation in all the organs. By virtue of this law, when the organs are at rest and their action suspended, the circulation in them grows languid; and it increases, on the contrary, as soon as activity is resumed."—*Boston Journal of Chemistry.*

EUROPEAN SCIENTIFIC NEWS.

EDIBLE EARTHS.—The narratives of travelers had long since made us acquainted with the wonderful fact that in the neighborhood of a village in Lapland, situated at the mouth of the river Ponoi, and bearing that name, on the northwestern coast of the White Sea, and the Peninsula of Kola (Cape Orlow),

there is found a kind of light whitish dust, somewhat similar to talc, which, like the manna that fed the Israelites in the desert, is gathered by the people of that district and used as food. The truth is, that it is not used by itself, but mixed up with ordinary flour, and made into bread.

It appears now that another kind of edible earth is found in Southern Persia, at Kirman, 5,000 feet above Salysteppe. The inhabitants of that district call it *G'hel-i-G'iveh*, and use it in various culinary preparations, mixing it up with their food in different ways and forms.

We find in the *Bulletin of the Imperial Academy of St. Petersburg* a description and analysis of a specimen of these two kinds of earths, by Mr. C. Schmidt, which is very complete and interesting.

The Lapland earth forms an important stratum, from two to three feet thick, under the sand and clay of the river Atsche-Rjeka, which falls into the White Sea, near the river Ponoi. This earth is a finely pulverized silicate of potash. The analysis made with fluorhydric acid gives the following results :

100 Parts of Dust Dried in the Air.

		Oxygen.
Water eliminated at 212 deg.....	0.260	.....
Water eliminated at a pale red heat..	0.835	0.742
Alumina,.....	40.797	19.049
Peroxide of Iron.....	0.310	0.093
Magnesia,.....	0.618	0.247
Lime.....	Traces	Traces
Soda.....	1.829	0.471
Potash	9.845	1.671
Silica, Traces of Fluorine,.....	45.506	24.109

This silicate comes, no doubt, from the debris of a schistose bed, which the melting of the snow or the rain-water brings down into the Atsche-Rjeka valley, where they are deposited in layers, just like china clay.

It would be interesting to explore the upper part of the valley in order to discover the schistose formation from which this edible earth is derived.

From the above analysis it will be seen that this substance, as an article of food, possesses no nutritive quality whatever, as it does not contain any element which can be assimilated by the digestive organs.

The specimen of the earth called *G'hel-i-G'iveh*, from Kirman, in Persia, is found in the shape of white nodules with gray spots. These nodules are of various sizes, varying between that of a walnut and that of an apple. Dissolved in water, this earth forms a whitish, impalpable sediment. It is soluble in dilute hydrochloric acid and in nitric acid; also in warm acetic acid. The solution is attended with a strong development of carbonic acid, and leaves a small residue of silica. Analysis gave the following results:

100 Parts of G'hel-i-G'iveh Nodules Dried in the Air.

Carbonic acid,	45.723
Chlorine	2.147
Phosphoric acid,	0.165
Magnesia,	32.792
Lime	13.235
Chloride of sodium	1.395
Soda	0.478
Peroxide of iron	0.092
Alumina	0.227
Silica	0.765
Water tested after desiccation at 250 deg	1.558
Hygroscopic water,	1.422
	100.000

If these elements are grouped, the following is obtained:

Carbonate of magnesia	66.966
Carbonate of lime	23.634
Chloride of sodium	3.542
Sulphate of soda	0.598
Hydrate of magnesia	1.401
Oxide of iron	0.092
Clay,	0.227
Silica	0.965
Water	1.153
Hygroscopic water	1.422
	100.000

This edible earth is somewhat similar to *magnesia alba*.

THE EXPANSIVE POWER OF FROZEN WATER.—M. Boussingault, the eminent French *savant*, publishes the following remarks on the subject:

The force with which water tends to expand during congelation is considerable, since it must be equal to the pressure it

would be necessary to exert on a piece of ice to diminish its volume by 0.08 (the density of ice being 0.92). The Florence Academicians, having exposed a copper sphere filled with water to an intense cold, effected its rupture, although the thickness of the metal was .67 of an inch. Huyghens, in 1667, succeeded in bursting an iron cannon filled with water, in two places, by the freezing of that water, although the cannon had the thickness of *one finger.*

These experiments have become quite established. But Boussingault thought there might be some interest in reproducing them by trying to freeze water in a cylinder made of a metal much stronger than iron; a steel gun, for instance, capable of resisting, even with a diminished thickness of metal, the pressure of several hundred atmospheres in the regulation tests to which gun barrels are subjected in military arsenals. Supposing that the steel offered a sufficient resisting power, it was interesting to ascertain whether the water confined in the gun would preserve its liquid state, notwithstanding a temperature below the freezing point, owing to the obstacle opposed to its expansion.

A steel cylinder, eighteen inches long, was cast and wrought. It was bored to a depth of ten inches, the diameter of the bore was half an inch, and the thickness of the sides five-sixteenths of an inch. The base of this cannon of solid steel had a hexagonal shape, in order to be firmly held in the bite of a powerful screw. The mouth had a thread to receive a screw stopper of steel, furnished with a strong lead washer, so as to hermetically confine the water, and allow of no possible leakage. A steel ball was put in the water to indicate by its motion or immobility the unfrozen or frozen condition of the water. The capacity of the bore was about twenty-two cubic inches.

On the 26th of December, the gun, previously cooled to —4 degrees Centigrade, was filled with unboiled distilled water at the same temperature. The steel ball was introduced, and the stopper was carefully screwed at the mouth. On moving the cannon the striking of the bullet against the sides was distinctly heard.

At 9 A. M., the cannon thus loaded was exposed on a terrace, the temperature of the air being —13 degrees. At 12 o'clock, the

thermometer marking 12 degrees, the rattling of the steel bullet showed that there was no sign of freezing inside the gun.

On the 27th of December, at 8 A. M., the thermometer indicated 24 degrees; the motion of the bullet still showed that the water inside the gun had not frozen.

On the 30th the stopper was unscrewed, the temperature being then —10 degrees. Scarcely was the water exposed to the air than it froze instantaneously, on the pressure that prevented its expansion being removed. The water, whilst shut in, not being able to expand, had resisted the influence of a very low temperature.

Major Williams had already made similar experiments at Quebec, and had burst bomb-shells filled with water and exposed to a low temperature. He had come to the same conclusion, namely: that if the resistance of the sides of the vessel exceeded the expansive force developed during congelation, that resistance absolutely prevented the freezing of the water.

International Congress of Prehistoric Anthropology in Brussels.—This body has held its session at Brussels this summer. Last year Italy was the selected seat of the Congress, and very interesting researches were made into the obscure history of the old Etruscan civilization.

This year, Belgium was fixed upon as a field of research and study of still older times, the tokens of which were lately discovered by M. Dupont, in the numerous caverns of the Meuse valley.

A full report of the discussions in this Brussels Congress, or even a condensed digest of its transactions, would take too much space. Suffice it for the present to state that it was only in the year 1829 that three French geologists, MM. De Christol, Tournal, and Dumas advanced for the first time the strange proposition that man had lived on earth at the same time as the species of animals now extinct whose bones are found buried in the silt of old caverns, where, no doubt, they had taken refuge and died.

Another French geologist, Boucher de Perthes, continuing the researches of his predecessors, was the first to obtain for the new proposition a scientific recognition. But it was a Belgian, M. Schmerling, who at last succeeded in demonstrating defini-

tively the proposition so boldly advanced by the French geologists. So early as the year 1834, Schmerling showed that in the caverns of the province of Liege, very ancient land-slips having covered up the paleontological stratum in which human bones are found, this stratum had remained untouched by subsequent handlings, and therefore the contemporary character of all the remains it contained could not be doubted.—*Boston Journal of Chemistry.*

Operative and Surgical Department.

NITROUS OXIDE.

Its Chemistry, Manufacture, Administration, &c.

BY E. C. CHASE, D. D. S., IOWA CITY, IOWA.

Since the advent of "liquid gas" there seems to be a disposition with the dental and medical profession to give nitrous oxide a higher and more important place among anæsthetics than it has formerly occupied. This is probably owing to the fact that it can now be obtained in a convenient form, comparatively pure already for administration; and this has induced some of our best men, who have neither the time or conveniences necessary to prepare it with their own hands, to make use of it when an anæsthetic is called for, instead of its more dangerous rivals: chloroform and ether.

We may now expect to see it fairly tested by scientific, thinking, educated practitioners, and I predict that it will very soon take the rank it justly deserves, viz.: the best known anæsthetic for dental as well as short surgical operations. In view of the fact that nitrous oxide is about to come into very general use, too much cannot be known of its manufacture, chemical properties, and its effects on the system.

To those dentists who prepare their own gas, a few words on

ITS CHEMISTRY AND MANUFACTURE,

Will undoubtedly be interesting, and, perhaps, instructive.

There are known five distinct chemical compounds of oxygen and nitrogen, viz.:

Nitrous Oxide,	containing	2	atoms of	Nitrogen	to 1	of Oxygen.
Nitric Oxide,	"	2	"	"	2	"
Nitric Tri-Oxide,	"	2	"	"	3	"
Nitric Tetr-Oxide,	"	2	"	"	4	"
Nitric Pent-Oxide,	"	2	"	"	5	"

As the first of these, viz.: nitrous oxide, is the only one that particularly interests us as dentists, I will dismiss the others with a very few words: The second compound named above, nitr*ic* oxide, contains half of its volume of oxygen, and more oxygen in proportion by weight than nitr*ous* oxide, yet it does not easily support combustion, as it requires a higher temperature for its decomposition. Its symbol is N. O., and when in contact with atmospheric air it combines with the oxygen, forming red fumes. It differs from nitrous oxide in another respect: it cannot be condensed to a liquid, whereas the latter can be.

The third compound, nitric tri-oxide has for its symbol $N_2 O_3$, and is of the same chemical composition as the red fumes spoken of above; *they* and *it* are one and the same thing; cooled to —186, it assumes the liquid form with an indigo-blue color.

The tetr- and pent-oxides are still less interesting to us just now, from the fact that they both often occur in the solid or liquid form, and are not liable to be found as impurities in the gas we administer.

NITROUS OXIDE

is the compound to which we will now give attention. This gas is prepared from ammonia nitrate N. $H._4$ N. $O._3$ by heat. On heating, the salt first melts, then the surplus water is driven off; after which, the heat being increased, it is decomposed into nitrous oxide and water, N. $H._4$ N. $O._3 = N._2O. + H._2O$. Thus we see that there is twice the quantity of water as gas in the nitrate of ammonia. The water passes off as steam and is condensed in the first wash bottle, while the gas passes on through the several purifiers into the receiver. The pure gas is colorless and inodorous, possessing a slightly sweet taste. Nitrous oxide rekindles a glowing chip of wood, and the wood continues to burn with a much brighter flame than in air.

The gas is quite soluble in cold water; one volume of water at 0°C. dissolving one and one-third volumes of gas. This property every dentist who manufactures the gas has discovered

by the mysterious disappearance of the first "batch," if not immediately used after fresh water has been placed in the tank. If the gas be brought under a pressure of about 450 pounds to the square inch, at 0°C., or if it be cooled down to —88°C., under the ordinary pressure, it forms a colorless liquid; if this liquid be cooled below —115°C. it solidifies to a transparent mass. The lowest artificial temperature ever attained has been produced by the rapid evaporation of this liquid *in vacuo*. So much for its chemical and physical properties.

MANUFACTURE.

In order to have pure gas we must start with pure nitrate of ammonia. This salt may contain impurities of various natures, such as nitrate of potash or sulphate of ammonia, but as it would require at least a limited knowledge of analytical chemistry to be able to test its purity, we, as dentists, must rely upon those who supply us with it, therefore we should purchase only from reliable parties. Starting with pure salt, nothing but criminal carelessness will prevent us from having pure gas. For an ordinary receiver of 50 gallons, at least three wash bottles should be used. The first containing pure water; the second containing some alkali, such as potash or quicklime, I have used both with equally good results; and the third, a few drops of sulphuric acid. A great mistake is made by some in not renewing the water in the bottles often enough. That in the first should be changed every time gas is made, and the others should be emptied and replenished with clean water and fresh chemicals every two or three times gas is run off. By observing these precautions, and taking care not to *over* heat the salt, one cannot fail to produce good, pure gas every time, and gas which may be given immediately, if necessary, with the best results. Too much heat should not be applied, otherwise nitric oxide will be generated, and this coming in contact with atmospheric air, or nitrous oxide at a high heat, would unite with the oxygen of the latter, and the tri- or tetr-oxide would be formed, and, of course, if either of these gases should pass into the receiver, unpleasant results would be very apt to follow their inhalation. Therefore, whenever these reddish brown fumes are seen, the heat should be diminished at once, and the connection between the generating apparatus and receiver broken

until they disappear. I have no thermometer attached to my retort, prefering to judge the quantity of heat necessary by the rapidity with which the gas is generated.

The practice of giving nitrous oxide from a bag, through a single valve mouth-piece, cannot be too strongly condemned, and, in fact, should be held criminal. After the first inhalation, more or less carbonic acid is taken into the system, increasing in a great ratio with each subsequent breath, and we have the poisoning results of breathing this gas, and when the patient expresses himself as feeling depressed and sick, the blame is thrown upon the nitrous oxide, and thus a valuable anæsthetic is brought into disrepute. *It should always be given through a double valve mouth piece, whether taken from bag or gasometer*, for in this way nothing but pure gas enters the lungs at each inhalation. Whether the gas is decomposed into its native elements, oxygen and nitrogen, while in the blood, has never been definitely settled, I believe; some contending that it is, others that it is not; neither do we know *how* it produces anæsthesia, no more than we know the *modus operandi* of chloroform or ether.

As the loss of consciousness is the first result of the inhalation of nitrous oxide, it is believed that it first acts upon the cerebrum, and then stertorous breathing following is evidence of its influence upon the medulla oblongata, after which, if continued, the pulse gradually diminishes, showing that it has found its way to the ganglia of the heart. I find that from three to ten gallons of the gas is required to produce total insensibility, depending upon the physical condition of the patient, and that the influence lasts from three-quarters of a minute to a minute and a half.

[*From the Monthly Review of Dental Surgery.*]

DENTAL PERIOSTITIS.

BY OAKLEY COLES, ESQ., L. D. S. R. C. S.

Dental-Surgeon to the Hospital for Diseases of the Throat, London.

In the presence of symptoms that have induced a patient to visit the dental surgeon in order to have a tooth extracted, the practitioner is not unfrequently determined as to the treatment

of the offending organ by the presence or absence of severe periosteal inflammation. It happens, in a large number of cases that if percussion gives acute pain, it is decided that extraction is inevitable; still more amongst medical practitioners is this the case than with those who are occupied only with dental surgery. Doubtless, in many instances, the tooth may be saved, where, on the theory indicated, extraction would seem desirable.

Supposing periosteal inflammation to have arisen from severe cold, and the patient comes, complaining of pain in all the teeth on closing the jaws, and still more acute pain on percussion, we do not think for a moment of advising extraction, but rather suggest local depletion (if indicated) and rest to the teeth, by abstaining from such forms of diet as require great and complete mastication; at the same time recommending constitutional remedies of such a nature as to reduce the general inflammatory condition of the system.

In localized dental periostitis in its early stage we also recommend local depletion by means of leeches or lancing, and adopt such general treatment of the body as may be indicated; but so far as my own experience goes, we do not try the remedy, of *rest*, beyond that which the patient will practice, as a means of avoiding the severe pain which contact with any hard substance causes.

To obtain for the tooth with an inflamed peri-dental membrane that amount of freedom from pressure which shall give a hope of its being saved, I would recommend the following treatment—capping all the other teeth of the jaw. Garrettson suggests, in his work "On Diseases and Surgery of the Mouth, Jaws, and Associate Parts,"—"That rest is to be secured by heating a small piece of gutta-percha, and moulding it in the form of a cap over certain of the healthy teeth. A mouthful of cold water at once hardens this, and thus occulsion of the sound with the diseased tooth is prevented."

This will not, however, give that complete rest that is necessary to bring the treatment to a successful issue.

An impression of the mouth must be taken (the upper or lower jaw, according to where the tooth is situated,) in plaster of Paris, mixed with warm water, so as to prevent pressure and avoid shock. This having been cast, a piece of lead plate, the

thickness of a shilling, is to be moulded accurately all over the crown of the affected tooth; capping this, and all the other teeth of the jaw, a plate may be mounted up in wax, to such a level on the masticating surface as to leave a sufficient thickness of vulcanized rubber over the tooth to be treated to prevent breakage on biting; this may then be made in vulcanite in the ordinary way, the front teeth remaining uncovered, if desired, for the sake of appearance.

In the end we obtain this,—a complete and even bite all round the mouth, and protection to the diseased organ from direct pressure or accidental violence,—a space surrounding the crown, to the extent of the lead cap that was applied before mounting up the plate. With regard to the tooth, we give the fullest opportunity to either of the terminations of the inflammation, namely, resolution to its normal condition, suppuration and formation of alveolar abscess, or organization of the effused lymph into a fibrous, or, later, osseous structure, that shall be able to bear without inducing pain the pressure of the antagonistic tooth.

All this involves time, patience, and inconvenience; but these are, with some, not to be weighed in the same balance against the "ordeal by touch" of the forceps.

NÆVUS.

A lady of highly nervous sanguine temperament, being about two months pregnant, after violent suffering from an abscess at the root of the right upper cuspid, determined to have it extracted. The operator, not knowing her condition, attempted to remove it. He took off the tooth with his forceps, and "after a long pull" he detached them, and left the patient in her chair. The gum bled profusely, the agony was unendurable; she believed a large piece had been torn out of the jaw. He again took hold of the tooth and removed it at once. The lady was greatly exhausted and frightened. She went home, and was soon seized with labor pains. For twelve hours they continued, with slight hemorrhage from the womb—everything indicating abortion; but the use of internal remedies removed the pains, and in a few days she was well again.

Two months later she was terribly frightened, and again threatened with abortion, but it too soon passed away, and she went on until full term. Labor came on; examination revealed a deformed pelvis, but the bones of the fœtal head were so soft and flexible that no danger was anticipated for mother or child. After thirty-six hours of labor, eight of which had been violent, the pulse became constantly intermittent, she was exhausted, helpless, delirious and then unconscious. It was feared chloroform would increase the danger, therefore it was not given. Obstetrical forceps were used, and the child soon delivered. It was cyanotic, evincing imperforate *foramen ovale*, the pulsations of the heart were scarcely perceptible, a faint effort was made at inspiration at long intervals, but they soon ceased. The face was remarkable. A fissure, a quarter of an inch wide, extended from the right nostril to the mouth, through the lips and alveolus. All the integument and bone was gone, corresponding to the mother's impression of her own face and condition when the tooth was extracted.

HENRY SHEFFIELD, M. D.

Nashville, Tenn.

In an article by C. E. Francis, D.D.S., in the October number of this JOURNAL, in criticisms of my arricle entitled, "Screws for Securing Gold Fillings No New Thing," he insinuates that I claim the discovery or originality of their use. If he will carefully re-read, he will discover that I did not, but called upon the profession for information as to who, and when others had practiced what Dr. C. H. Mack had just patented, and simply related one case so treated in 1857.

Now, as the writer said that in the *American Journal of Dental Science*, of April, 1855, Dr. Wm. H. Dwinelle advocated the use of screws for this purpose and published his method, and that he (Francis) had used them years ago, and so had others; I say the more widely diffused the knowledge of these operations, and by the greater number performed, the worse for Dr. Mack. As the man catching frogs for the market said, when, as frogs became scarce, he commenced catching toads, and being told by a passer-by, that those were toads, cooly remarked, "The worse for the toads then," and continued catching them.

I do not know who first used screws for the purpose of securing a hold for gold fillings, nor is it material; but, I do object to men in a profession, riding into notoriety or wealth, or perhaps both, on borrowed capital. More than that, I long for the day when our profession shall stand side by side with the medical, reading out of its ranks all men who stoop to ask patents, for their own inventions even.

DR. E. HONSINGER.

[*From the Monthly Review of Dental Surgery.*]

THE SURGERY OF THE MOUTH.

BY FRANCIS MASON, ESQ., F. R. C. S.,
Assistant-Surgeon and Lecturer on Anatomy at St. Thomas' Hospital.

INFLAMMATION OF THE MUCOUS MEMBRANE.

The mucous membrane of the mouth is subject to inflammation in its various forms. The inflammatory action may commence as simple vascular excitement, ending either in a return to a healthy condition of the part, or resolution; or it may pass on to one or other of the secondary forms of inflammation, such as the effusive, the adhesive, the suppurative, the ulcerative, and the gangrenous varieties respectively. Certain tissues of the body are more prone to ulceration than others. Thus, mucous membrane, skin, and areolar tissue are very liable to it; whilst fibrous, vascular, and nervous structures resist its action for a considerably longer time. Of the above-named inflammatory processes, the ulcerative form is that most commonly met with in the region of the mouth.

Inflammation of this part is known under the comprehensive title of stomatitis, four varieties of which will now be briefly described. 1st. Stomatitis simplex, or erythema of the mouth; 2nd. Follicular or apthous stomatitis. 3rd. Ulcerative stomatitis; and 4th. Gangrenous stomatitis. The disease known as "Thrush" will also be incidentally referred to.

Stomatitis Simplex, or simple Erythema.

As its name indicates, this is the simplest form of the disease. It is observed at all periods of life, and arises either from constitutional causes, or it may depend on the patient taking into the mouth fluids at too high a temperature. Inveterate smo-

kers are not unfrequently subject to it. Like erythema of the skin, it consists of a number of red patches, the redness varying in intensity. There is an inflammatory blush here and there, as if the parts were inordinately injected with blood. In children there is loss of appetite, with slight diarrhœa and some feverishness. It is met with at any part of the mucous surface, but generally, in the author's experience, on the soft palate and fauces. It constitutes one of the simplest forms of sore throat, accompanying a common cold. It is, in most cases, a trivial ailment, although it may pass on to the more severe forms of the disease. It is frequently noticed in ill-fed children during their first year. Depending usually, as it does, on some gastric derangement, simple remedies alone suffice to arrest its progress. A purgative, such as a dose of castor-oil, or, for children, the occasional administration of five grains of the Pulv. Rhei. Comp. (PH. BRIT.), will speedily effect a cure without the necessity for any topical application. If a local remedy is needed, a solution of nitrate of silver, gr. 5 to 10 to the ounce of water, with subsequently an astringent lotion, will be found beneficial.

Follicular Stomatitis.

In this disease there is something more than the mere blush already alluded to in simple erythema; the follicles, as the name implies, being the principal part involved. The malady seems to hold a middle place between the simple form of the disease, or erythema, and that of which we shall speak presently—the ulcerative stomatitis. Follicular stomatitis is a common disease amongst children, being often coincident with or following those ailments peculiar to early life, such as measles, &c.; and it is said to be rarely found after the age of five. If it occur in adults, which it certainly does, it gives rise to very slight constitutional disturbance. It is said to be endemic, especially in Holland. In children, the symptoms are more marked. There is much restlessness, loss of appetite, a capricious condition of the bowels, alternating between constipation and diarrhœa, and general malaise. The mouth is hot, and the salivary secretion is increased, although, in some instances, it is much diminished. The disease is especially characterized by the appearance of a number of small, hard, round, and, more or

less, elevated spots. These are, doubtless, the mucous follicles, slightly enlarged by inflammation, which, subsequently, may or may not ulcerate. In addition there will be commonly observed a vesicular eruption occurring in patches in the mouth, and not unfrequently on the lips, closely resembling herpes. Their appearance is not unlike what one might imagine, supposing the parts to be scalded with minute drops of boiling water. These vesicles containing at first a transparent liquid, which soon becomes turbid, at length burst, and leave a number of small, isolated, very superficial ulcerations. These may extend over the whole surface, but are chiefly met with on the tongue, especially at its tip, and between the cheek and gums of the lower jaw.

It is important to draw a distinction between this follicular stomatitis, sometimes termed apthous stomatitis, and the disease known as "thrush," which often (but inappropriately, as leading to confusion) goes by the name of "apthæ." The fact is, that each disease has its own distinctive characters.

The cause of follicular stomatitis has not yet been ascertained. Like every other variety of the malady now under our notice, it is rife amongst ill-fed and weakly children, and in those subject to hygienic vicissitudes. The *treatment* consists in paying especial attention to any intestinal derangement. Small doses of rhubarb and soda may be given, or five grains of the Pulv. Rhei. Comp. (PH. BRIT). As local remedies, a lotion of borax, to be immediately referred to, or a solution of nitrate of silver, five or ten grains to the ounce, may be applied directly to the part with a camel's-hair brush. Subsequently astringents may be required; thus one to five grains of alum, or from two to four grains of either sulphate of zinc, or sulphate of copper, in an ounce of water, may be employed.

Thrush.

In thrush, or diffuse inflammation of the mouth with curdy exudation, the characteristic feature of the disease is the presence of a cryptogamic vegetation. This fungus, known as the *Oidium albicans*, is rather the effect than the cause of the dis ease. Thrush, although it occurs in adults as a complication of other diseases, may yet be considered an ailment peculiar to early infancy; and the fact that the mucous secretion is nor-

mally acid during the first weeks of life, tends further to promote or favor the development of the microscopical parasitic plant in infants.

The symptoms of *thrush* are these. The little patient is generally being brought up artificially—at least without the mother's milk. There is some gastric derangement, with most probably diarrhœa. We notice, scattered over the tongue, especially at the tip and edges, and on the inside of the lips and cheeks, numerous small, very adherent specks or shreads, white and slightly elevated, not unlike curds of milk, and consisting of, according to microscopic examinations, conducted by M. Berg, of Stockholm, thickened epithelial cells, with cryptogamic sporules, from the midst of which small thread-like branches arise. Several of these may coalesce and form larger patches. They are removed with difficulty, and, when taken away, the mucous membrane is found reddened, but not ulcerated. The little patient is depressed in health, and has more or less difficulty in swallowing.

There is irritability and feverishness, and perhaps some diarrhœa. The affection often commences as a simple erythema, but it soon acquires its special characteristic of the curdy exudation. It is, moreover, contagious—a fact established by experiment. The essential treatment of thrush consists in destroying the parasite: hence, a solution of 60 grains of sulphite of soda in an ounce of water is found a useful application. The mel boracis of the PH. BRIT. has been recommended, but there is an objection to this, and, indeed, to any preparation containing saccharine matter, as the sugar readily passes into a state of fermentation. A far better lotion is one composed of about 20 grains of borax (sodæ biboras) dissolved in an ounce of water, or of rose water. The child's mouth should be thoroughly washed out after each meal, and kept at all times scrupulously clean. Astringent lotions may be required, and the chlorate of potash may be given in from 3 to 5 grain doses. Subsequently cod-liver oil and iron may be administered in suitable form, and if diarrhœa be present, it may be checked with a little magnesia, chalk, and opium.

Ulcerative Stomatitis.

The peculiar characteristics of this disease are that it attacl

the gums, and that there is an absolute loss of tissue by ulceration. The mucous membrane around the teeth generally is swollen, and bleeds easily. The incisors of the lower jaws being most frequently the first attacked. If ulceration be present, the ulcers have violet congested edges, and are covered by a grey ash-colored superficial slough. One prominent symptom is offensive fœtor of the breath, and in many cases extreme salivation. The ulceration may proceed to the cheeks, which, with the tongue, are found soddened in appearance, and indented by the teeth. The upper lip is considerably swollen, and the submaxillary glands are often enlarged and painful.

This affection usually occurs in ill-fed children, but it is met with also in adults. The author has observed that one by no means unfrequent cause of the disease in adults is the eruption of the wisdom teeth. It is especially marked in those patients in whom these teeth appear late in life. Dr. Icard refers to this circumstance in the *Gazette Medicale de Lyon*, January, 1862. He says, that in consequence of the delay of the appearance of the tooth the jaw has had time to become ossified: hence the escape of the tooth is attended with more or less pain, and it may be with inflammation of the mouth, causing ulcerative stomatitis, and even caries and necrosis of portions of the maxillary bones. It is said to be particularly rife during the autumn months, but the writer noticed, amongst the out-patients at St. Thomas' Hospital during the months of May and June of this year, that the affection took almost an epidemic form, and was by no means confined to children.

Sometimes the entire mouth seems to undergo a sloughing process as the result of excessive ptyalism, and much resembles cancrum oris. Such a case is recorded in the *Lancet Mirror*, February 26th, 1859. It is termed one of syphilitic gangrene of the mouth, in which laryngotomy was successfully performed for threatened suffocation. Powdered alum was blown into the mouth with a quill, and seemed to expedite the separation of the sloughs.

With regard to treatment in ulcerative stomatitis the chlorate of potash may be considered the sheet-anchor. For a child a year old, five grains may be given three or four times a day, in

sugared water. For an adult, from ten to thirty grains of this salt may be administered every four to six hours.

The following mixture with bark may be employed:

℞—Potassæ Chloratus, gr. 160
Inf. Cinchonæ flav., ʒ 8

Ft. mist. An eighth part to be taken in an equal quantity of water every four hours.

For topical remedies, the best is the direct application of the solid nitrate of silver or sulphate of copper to the ulcerated surfaces, and whenever one of these can be employed it is far more efficient than the same in the form of lotions, although the latter may be advantageously used in addition. It is of great importance that the diet should be nourishing, alcoholic stimulants not being so much demanded as bland farinaceous food.

In mercurial stomatitis, M. Amekler, a Spanish surgeon, thinks that gargling with brandy in cases of ulcerated mercurial stomatitis is extremely useful, combined with cauterization by means of sulphate of copper. He does not deny the virtues of chlorate of potash, alum, or the dilute acids, &c., but he has found, in several cases, the alcohol wonderfully efficacious.

MEXICO, Mo., November 18, 1872.

DR. HENRY S. CHASE—Dear Sir: I herewith send you some pieces of bone and partially formed teeth, taken from a little girl three years old; she having lost all her temporary and germs of permanent teeth, caused by calomel, administered by an allopathic physician. The child was taken with congestion of the brain, and the *Doctor* treated her for bilious fever, as four *others* of the family were down with that *complaint*. He diagnosed the case as the *same*, giving his remedies with the most disastrous result. I saw the case two weeks after, it had been salivated or poisoned; and then I took away all loose pieces of *bone* with the teeth. The child has not yet recovered from the effects of the drug, but I think I have arrested all farther progress of *necrosis*, but the poor child will never have any teeth. The physician denied the case as being one of salivation, as there was no increased flow *from the glands*. But the glands both ulcerated and were lanced.

Doctor, my object in sending these to you, is caused by seeing an article in a number of THE DENTAL JOURNAL, calling on the members of the dental profession to contribute any matter of interest which they may have, and thinking this may be of some interest, or could be contributed to the collections in the dental college, so that it may be seen by *students*, as not often do we come across cases of this kind, and it is very fortunate we do not. Being young in dentistry, my object is for its higher elevation, and whenever I can do anything for its furtherance I take pleasure in doing so. Very respectfully,

THOMAS FLINT.

I received the necrosed teeth, germs, and bones, and shall put them in the Cabinet of the Dental College. We thank the Doctor for the donation, which is a valuable acquisition to the College Museum.

Mechanical and Miscellaneous DEPARTMENT.

FACIAL NEURALGIA.

[Read at the Fourth Annual Reunion of the Dental Societies of the 7th and 8th Judicial Districts of the State of New York, held at Rochester, N. Y., October 29th and 30th, 1872.]

BY LEON F. HARVEY, M. D., BUFFALO, N. Y.

MR. PRESIDENT AND GENTLEMEN—We propose to devote a few minutes to the consideration of Facial Neuralgia, also termed Tic Doloreaux and Prosophalgia. We hope to be able to give such information as will be a guide in practice, trusting that the disease will be more diligently studied. The suffering produced by facial neuralgia is so intense that it seems to render those affected with it almost insane. It is an affection of the tri-facial or fifth pair of nerves, which is divided into the opthalmic, superior and inferior maxillary branches. The opthalmic

is distributed to the forehead, nose and the eye. The superior maxillary supplies the orbit, the superior maxillary bone, the teeth and the muscles and integuments about the face. The third branch, the inferior maxillary, by its external trunk supplies the muscles about the lower jaw, while the internal passes to the tongue, the teeth, the ear and integuments. These branches are internally connected, thus making a continuous plexus of nerve matter, and it is not a wonder that persons affected with this disease complain of pain here and there, so remote from the apparent cause, the teeth, for we are now supposing that they are the cause, though we shall show that the cause is often quite removed from them.

Facial neuralgia is due most frequently to disease of the teeth, and to them, attention should at first be directed. A decayed tooth, even a little root, may give rise to it. A writer in the London *Lancet* says he lately had a case of facial neuralgia dependent on a stump, which was in the upper maxilla, and it was one of great severity. The stump was covered over by the gum, except a small aperture hardly wide enough to admit the head of a pin. It was extracted and the disease vanished. It is not necessary that a tooth be decayed to occasion this pain, the periosteum may be involved, the roots may be absorbed, or there may be exostosis on them, or on the pulp; the maxillary bones may be diseased, and be a fruitful cause, also it may be the result of the eruption of the wisdom teeth. Among the causes not connected with the teeth the following are some: Wounds of the nerve itself, or wounds more remote, derangements of the functions of various organs, as the stomach, liver or womb. The latter organ is very often the cause of facial neuralgia during pregnancy. Certain medicines when used for a long time, such as quinine or mercury, stimulants in the form of liquor, tobacco or coffee.

Malaria is a very frequent cause, hence we find it a very prevalent disease in malarious districts. Attacks are brought on to a person susceptible to it by very slight causes, such as touching the person, a current of air, noises, &c. Any undue excitement results often in a severe attack. Facial neuralgia most generally comes on at stated intervals, assuming the form of paroxysms. It occurs more frequently at night, some seasons

of the year are more favorable to its production than others, as Spring and Fall. The pain is of different kinds; at one time a throbbing, then a lancinating pain; frequently the pain is likened to that of an electric shock. It is felt in the temples, over the eyes; a very frequent place is just over the molar bone, through the ear, over one or both jaws, and often passing down the neck, then following the general course of the nerves. The pain is usually unattended by inflammation, though occasionally swelling and tenderness is observed. Of course, here as in all other diseases the first indication is to remove the cause; we may make this and that application, give all the remedies known for the alleviation of pain, and we shall fail if we do not ascertain the cause of all the trouble, and treat accordingly. If it be a diseased tooth or a root, remove it; examine the mouth carefully, not forgetting that a root may be all but covered, as in the case in the London *Lancet* cited above. If any of the organs give indications for treatment, place them in a healthy condition; remove all stimulants, heal all wounds. When it can be ascertained that the nerve itself is diseased, a cure may be effected by its division. If the intestines are filled with hardened fæces, a purgation must be prescribed. Valerianate of Ammonia has been recommended by Dr. Declat of Paris. Citrate of Caffine and Sulphate of Morphine have their good effects. Quinine is to be used in the periodic forms, and those which are clearly traceable to malaria. When the nervous system requires a tonic, carbonate of iron, or any form of iron, and a strengthening diet. Chamomile in the powder and in the concentrated form is used by M. Leconite. One of the best topical applications is Veratrine: ℞—Veratrine, 20 grains, Glycerine ʒi. Of this apply to the seat of the pain, inside the mouth, the quantity of a pin's head. On the face five times that amount may be used. Care should be taken in its use, as it is poisonous, and temporary paralysis may occur from it. Applications of chloroform, camphor and anodynes are often used with good results. Relief is almost certain to follow the hypodermic injection of Morphine, but it is only temporary.

Dr. Michael Andre recommends extracts of opium, belladonna and stramonium each one part, laurel water twelve parts; a few drops of the mixture placed in the meatus auditorius. A very

difficult case has come under our care lately. A lady, about fifty years of age, has been for a year or more a victim of this disease. The pain would come on in spasms, the opening of the mouth, or arising from her seat would cause intense pain. Her attending physician had been treating her with various remedies, but with no success. Finally, they thought the teeth might have to do with the pain, and she came to us pleading for relief. A root was the only thing that we could find that deserved removal—that of the second right inferior bicuspid. No relief followed the extraction, and again she came for help, hoping to have the teeth back of the root extracted, taken out. They were filled and also had small decays in them. Only extracted the first; there was slight exostosis on the root, the nerve cavity was nearly obliterated, and no vestige of a nerve. With the removal of this no relief was obtained. About two weeks since we thought it necessary to take out the remaining molar. On examination of it the pulp was found about half ossified. We all thought that here was the cause of all the pain. Meeting the husband the same evening, he said there had been no return of the pain. Still greater were our hopes that we had got at the root of the matter. About a week since we learned that the pain had returned with increased vigor. Before removing the last tooth, we were quite inclined to think that the nerve was diseased, and only by a division of it could the affection be arrested. Now, we are compelled to return to that position. Perhaps we shall find this case similar to one we had some years ago, and it was only after extracting many teeth that in that case we gave relief. It may be that with the loss of two or three more teeth the cause will be removed.

PEORIA DENTAL SOCIETY.

The first anniversary of the Peoria Dental Society, was held at Peoria, on the evening of the 3d inst., in Dr. E. B. Call's office.

The President, Dr. S. L. Edwards, called the society to order.

Letters were read from several dentists living out of the city, regretting their inability to attend, but expressing their friendly wishes for our prosperity.

The President then delivered the annual address:

GENTLEMEN OF THE PEORIA DENTAL SOCIETY—In accepting the office, which you so cheerfully conferred one year ago, I was not wholly unmindful of the responsibilities assumed. We were launching our professional ship in untried waters, and some even entertained doubts of our making the enterprise pay. Now that the first voyage is completed, and all are satisfied with the success, our vessel is lying in a quiet harbor, awaiting your action to-night, to man it for another trip.

In surrendering my charge to a more worthy captain, I gladly express my thanks for the hearty support you have ever given me while endeavoring to discharge the duties of the office.

By the action of our last meeting you required of me, not a song, but a saying, which you were pleased to designate a valedictory. You recollect the flatterings and misgivings attending our organization. How some who were loud in their attestations of approval, went back and have never been with us. How much they have lost by refusing to lend us their aid, we leave each of you, who have shared the profits of co-labor during the year, to decide.

To-night, we are proud to say, the Peoria Dental Society is a success. From the little band of five, who necessarily appointed each other in office, we have grown to a respectable body, just double. But numbers is not the chief item of prosperity. Every member present will join me in the assertion that, in this city, more teeth have been saved, by being well filled, during the year 1872, than any other five years of its history. By meeting frequently and comparing notes, a very healthy emulation has been awakened. Some of the discussions and papers read, if printed, would be a credit to any local society. We have a desire to improve all our operations, and remove the stigma so long attached to the profession here, because those who had a *name* were woefully wanting in *ability*. Why is it, that we are so often told by good, intelligent people: "I don't *believe* in filling teeth; have had mine filled and refilled, treated and filled again, and still suffered such torture I was disgusted with the whole proceeding, and had the offending members removed to get relief?"

We have had much true missionary work to do, and we are willing still to labor on, until our chosen profession shall com-

mand the respect of every good citizen. If we do our whole duty to ourselves, to one another and to our patients, not another year will pass before the influence of this Society will be felt, and our enemies will gain nothing by misrepresentations and false statements concerning our motives, and the objects of our monthly meetings. We understand some of the benefits already realized, and extend the hand of welcome to those *without*, assuring them there is room and work and benefit for *them*, if they will come and remain with us.

We say to each other, let there be no strife or ill will engendered, but let us abhor to speak evil one of another—knowing we cannot, and never ought to command the respect of our patrons, until we show a proper regard for *all* who are honorable laborers in our ranks. Let us teach and practice, that when the reputation of a worthy brother is assailed, *I* am an interested party, and will unhesitatingly present my shield in his defense.

Taking charge of a seminary, I found a large class of young ladies and gentlemen studying arithmetic, who said they were very anxious to get through; had been kept, term after term, going over the same ground. A very brief examination fully satisfied me they were *wanting* in first principles. The whole class almost rebelled at my decision, but after proper explanation they cheerfully submitted to a thorough drill in notation, addition, subtraction, multiplication and division. In a few weeks, every member of the class was ready to vote me thanks, and render compensation, by admitting they had been more benefitted by this drill than all their former study. Principles being mastered, all remaining was comparatively easy.

There are men "in dentistry, all over this country, hammering away at complex, compound and *decimal* fractions, *inverse* proportion, who know nothing of notation. They are drilling and *gouging*, and wiping and stuffing "at teeth," while they should be meek and humble students, learning at some good preceptor's feet the first principles of Harris and *common* sense.

Go with me, in imagination, as a committee authorized by the strong arm of the law, to examine every man in the State of Illinois who has the assurance to advertise himself a dentist. Let us have prepared a set of questions, quite as simple as our

State Superintendent of Public Instruction prepares for the school ma'ams, viz:

How many teeth compose the first, or temporary set? Their names and locality?

Which of the second teeth appear first, and at what age?

At what ages do the others appear, until all are erupted?

How many parts to a tooth?

Of what is it composed?

Describe the pulp, the enamel, the dentine, the cementum?

Give the chemical composition of each part?

What supplies the nourishment to the tooth?

What causes a tooth to decay?

How few would reach seventy-five and *barely* pass, while the great mass in embarrassment would range hard down towards zero! If we could succeed in convincing such, that they had decked themselves in a garb of *self*-righteousness, of which they were entirely unworthy, we should have hope of their surrendering that garb, or submitting to primary drill. "First see thy folly, then amend."

I have not, and cannot have, any respect for a man calling himself a dentist, who ignores dental societies and dental litera ture. Such an one renders himself so contemptibly small, that he appears like an object viewed through an inverted telescope, and places himself so far in the distant past, that he can make no claim to a name with a progressive profession. How *hard* he labors in chosen darkness, perhaps but little aware of his evil deeds.

There is no earnest laborer in our field, however small his pretensions, but may advance some little idea that may prove as a key to unlock a mine of undiscovered wealth; and no one, though possessed of the largest capacities, who has power to originate a single new idea. He who has labored days, months and even years, to complete some instrument which proves a lasting blessing to mankind, may think it cruel to be told he is not the real originator. "All *new* ideas and all *truth* have but one fountain, that is God." We are but the mediums through which all good flows to benefit and bless the world.

Our qualifications depend upon the use of gifts bestowed, and we wonder not that a woe is pronounced upon him who hides even the *one* gift in a napkin. He who has received new light has no right to keep it to himself. It is not his own. If he does not give it to the world, he appropriates that to himself which only in *part* belongs to him. Let others be judges of the mite contributed by you. Give it, and your duty is performed.

In our specialty there is a broad field before us. Others have plowed and we are now reaping rich harvests. Our duty is to plow, and dig and search for the best fertilizers, so that those who follow us may say, "They have done what they could."

Our first step was to supply by artificial substitutes, the "pearly row" which had been destroyed by disease. The next was to direct all our energies to *preserve* those organs from destruction; but our highest and noblest aspirations will not be satisfied until we are able to keep them *free* from all diseases.

In the multitude of our imperfections, we shall doubtless have to struggle long and hard before we reach this desideratum; but for the dignity of our calling, and the blessed results to our race, let us labor on and pray on, holding high the promise: "According to your faith, so shall it be unto you."

The election of officers for the ensuing year resulted as follows: S. L. Edwards, Peoria, President; W. W. Dean, Lacon, Vice-President; J. M. Hurtt, Peoria, Secretary; F. W. Dean, Pekin, Treasurer.

The President urged members to make the necessary sacrifice to attend these meetings. Dr. Dean, of Lacon, said: "I come every month, even though sometimes the sacrifice is great, and have been well paid. If we make the effort, the Society can again be doubled in 1873." All others expressed themselves highly gratified at the results of the year, and promised renewed efforts.

JOURNALISTIC.

In the New York *Medical Record* we find it stated, that out of 500 samples of milk from "The Farmers' Pure Milk Association" of that city, 470 were adulterated. We have but little confidence in any association or set of men who advertise their own integrity. We do not know anything about the advertising propensities of this association, but we have seen advertisements of similar associations in other cities, which look too much like the quack advertisements which flood our current newspapers.

From the same source we learn that B. D. Emerson, of Massachusetts, left in his will a legacy of $100,000 to his Alma Mater, Dartmouth College. Who ever heard of a dentist who has left anything as an endowment to his Alma Mater?

The *American Journal of Dental Science* for November, has an article by J. P. Wilson, of Burlington, Iowa, which was read last May before the Illinois Dental Society, upon "Stomatitis Materna;" for which he recommends particularly the use of bread made of unbolted flour. We have no doubt but that coarse bread in certain cases is valuable, but there are many other remedial means which must be resorted to to meet all indications presented in the varying forms of this disease.

An essay by H. M. Grant, M. D., D. D. S., read before the Abington Academy of Medicine, collects cases of neuralgia pro-

duced by disease of the dental organs. The author very properly directs attention to the importance of a correct diagnosis in these cases, and if the cause of a neuralgia is not at first obvious, a consideration of the following questions may lead to a definite conclusion:

"1. Whether the neuralgia is confined to one side.

"2. Whether the patient himself is conscious or suspicious of a central cause in the teeth.

"3. Whether percussion of any tooth excites the pain.

"4. Whether the attack is brought on by exposure of the tooth to variations of heat or cold.

"5. Whether the pain is or is not intermittent.

"6. Whether remedies applied to the teeth are transitorily effective.

"Reasoning on these questions—if it be found that the neuralgia is confined to one side; if there be no distinct intermittence; if pressure on the nerve at its trunk relieves the pain; if local sedatives relieve the pain; and if the answer to a majority of the other questions be affirmative, the evidence is pretty clear that the cause is local, and that a diseased tooth is the local cause."

An extract from the *Gazette Hebdom.*, gives three additional cases of death from the inhalation of sulph. ether.

In the *Cosmos*, among the "Hints and Queries," we are not a little amused at the *learned answers* given to some of the queries by those who doubtless suppose themselves perfectly capable of answering any question. For instance, the question was "What is the best method of fastening teeth with rubber on gold plate?" The answer is, "if the plate is under twenty carats, solder attachments; if over, perforate the well polished surface and keep rubber clean."

The *Boston Journal of Chemistry*, which, by the way, has not been very seriously disturbed by the late fire, proposes to give us, in its next issue, "The Chemistry of the Great Fire." It ought to be an able and interesting article, and we have no doubt but that it will be. We find in this journal an account of some experiments made recently upon the green paper frequently used for wrapping lozenges, &c., with. The result showed that in sixteen square inches of this paper there was almost three grains of arsenic. The danger of poisoning small children may readily be inferred when we take into consideration the fact that this quantity would suffice to poison severely, if not fatally, several adults.

The *American Newspaper Reporter* says, that "an editor in Indianapolis made a fortune with his pen. His father died of grief after reading one of his editorials."

The *Dental Times* has a paper, written by W. H. Trueman, upon "The Manipulation of Gold Foil in Filling Teeth," but

which would have been better *headed*, if it had purported to be "A Plea for the Use of Soft Foils in Filling Teeth." The fact, that the use of soft foil for this purpose has greatly decreased of late years, does not furnish reliable evidence to prove that it is not valuable in its place. We have but little doubt but that soft foil will figure more extensively in dental practice in the next decade than it has in the last, but the knowledge of what can be done with the adhesive foils will not be forgotten, as it will ever mark an important epoch in the history of our profession. There are many cavities which can be as well filled and much more expeditiously with soft foil than with adhesive.

The next article is a translation from the German in relation to casting aluminium plates. It contains little if anything that improves upon our methods in this country, and as the author states that "mending an aluminium case is only possible by soldering," and that "the difficulty of accomplishing this is very great," it can hardly be expected that it will come into general use; especially as a swaged aluminium plate is in every respect better than a cast one.

A short article by James Tyson, M. D., upon "The Brunonian or Molecular Movement," explains the remarkable prevalence of animated beings described by Prof. Cutler not long since in the Nashville *Journal of Medicine and Surgery*. The same explanation of the phenomena probably suggested itself to the mind of every one who was at all familiar with the microscope. He says, "The Brunonian or molecular movement may be defined as a peculiar oscillatory motion, attended with little or no change of place, which is common to all bodies sufficiently comminuted to admit it." The particles must, however, be suspended in fluid. There is also an article of considerable length upon the last meeting of the American Association. As a scientific body the author thinks it rather a failure. He is particularly displeased, however, with the action of the Association in relation to some questions which sprung up during the election of officers. It will be remembered that there are two kinds of members in the American Association, the one permanent members and the other temporary members, as it were, being those who are elected delegates by some Society, College or Association to represent it at the coming session. The permanent members are those, who having been elected as delegates, choose to remain as permanent members, which they are entitled to do by signifying their desire to do so to the treasurer. If any one signifies his desire to be a permanent member he is recorded as such on the treasurer's books, and he is regularly assessed, whether he attends the association or not, and helps pay the expenses of the Association so long as he remains a permanent member. He may be a delegate each year or not, in either event he is a member in full fellowship as long as he

pays his yearly assessments. The delegate who does not signify his desire to become a permanent member, presents his credentials, pays his dues for that special session, and then his connection with the Association ceases. It is at once evident that the Association, as it stands to-day, is composed only of permanent members, and will remain so until after it meets again and elects delegates who do not desire to be considered permanent members, after which it will be again a mixed body.

Now, officers and standing committees are elected during one session, principally for service at the next session, and the Association, therefore, very properly sustained the ruling of the President; which in effect was, that officers and members of standing committees must be elected from those who would be members at the time when they would be required to perform their several functions; or, in plainer words, the Association refused to elect to the presidency a man who could not be a member of the Association at the commencement of the next session, and who would, to all intents and purposes, be an alien to the Association during the interval between the meetings; unless he should reconsider his choice, and *after being elected* conclude to signify to the treasurer his desire to become a permanent member.

We have no idea that there was any personal feeling mixed up with the decision of this question, and we have good reason to believe that the member who was particularly aggrieved by the decision, was regarded with the kindest feelings by a great majority of the Association.

The *American Journal of Dental Science* has the following in its editorial department relating to the Rubber Question:

CUMMING'S PATENT VS. DR. T. B. GUNNING.

For the information of the dental profession, we send you for publication, a copy of the answer used by Dr. T. B. Gunning, Dentist, of New York city, as defendant in suit brought against him by the Goodyear Dental Vulcanite Company, for infringement of the Cummings patent, minus Schedule A, which is a reply to the allegations as to the Gardner decision, recited in the Goodyear Dental Vulcanite Company's bill against him, and for prudential reasons will not be published out of a suit.

This is the fourth suit that has been brought against Dr. Gunning in the past six years, and this last one was dismissed at cost of plaintiff. They had failed in six years litigation of the matter to find out that the Doctor was entitled to the privilege of their patents, but suddenly the Doctor's answer, which they would not allow to go on record, for fear it would compromise their interests in instigating others to contest, convinced them that Dr. Gunning was, and had been all the time, entitled to these privileges. There is in our opinion, nothing

to prevent the dentists from defending themselves against the Cummings patent, except want of unity.

Dr. S. S. White, of Philadelphia, upon the affidavits on file, as published in the November *Cosmos*, has made application through his counsel, Messrs. Black & Baldwin, of Pennsylvania, to the Supreme Court of the United States, for a reversal of their decision, in the Gardner Appeal Case, rendered the 6th day of last May. The motion will be argued at an early day, and we have every reason to believe that it will have a favorable consideration.

R. B. WINDER, D. D. S.,
Chairman Executive Committee.

STATE OF NEW YORK,
CITY AND COUNTY OF NEW YORK, } *ss.*

Thomas B. Gunning, being duly sworn, deposes and says: That he is a Dentist and Dental Surgeon, doing business in the city of New York; that on or about the 7th day of June, 1872, a suit in equity was begun against him in the Circuit Court of the United States for the Southern District of New York, by the Goodyear Dental Vulcanite Company of New York, and one Josiah Bacon, for alleged infringement of the letters patent granted to John A. Cummings, June 7th, 1864, and re-issued to the Dental Vulcanite Company, of Boston, (the assignor of the complainants,) January 10th and March 21st, 1865:

That on the 5th day of October, 1872, the complainants' solicitors, by stipulation, extended deponent's time for filing his answer to the said bill of complaint to October 14th, and that in consideration of said extension, this deponent agrees to deliver in advance of the filing thereof, and on the 9th of October did so deliver to the complainants, said solicitors, for perusal, a copy of his intended answer, then nearly completed, and which was thereafter completed without any substantial alteration.

That the main defences stated in said answer were as follows:

I. That John A. Cummings was not the inventor of the improvement claimed by his patent, or of any material part of it.

II. That admitting him to have made such invention he had abandoned and dedicated the same to public use.

III. That the re-issued patents of January 10th and March 21st, 1865, above mentioned, were void for unlawfully enlarging the claim of the original patent.

IV. That the process given, or intended to be given, by all of said letters patent, was improperly specified, and that by said process, the improvement claimed by the patent could not be manufactured so as to be applicable to dental purposes.

V. Besides these defences upon the merits, the further partial defence that this deponent, by virtue of a certain license under the re-issued patents of Nelson Goodyear, granted to his

administrator, Henry B. Goodyear, May 18th, 1858, and by certain arrangements between this deponent's licensors and the assignors of the complainants, was entitled to continue unmolested by the holders of the Cummings patent, up to the 6th day of May, 1872.

That on the 11th day of October, 1872, or two days after receiving the copy of said answer, the complainants' solicitors in said suit requested this deponent's solicitor to keep said answer off the files of the court, until they could offer a certain important suggestion respectnig the conduct of the suit; that this suggestion was as follows: That though until lately convinced that deponent's plea regarding his license, namely, the fifth or partial defense hereabout set forth, was not true; they had recently found reason to be less sure on that point, and therefore they desired this deponent to confine his answer in the first instance to said plea only, they agreeing to stipulate that if defeated on that issue, he might then put in and litigate his other defenses.

That deponent with the concurrence of his counsel, refused to take this course; that therefore the complainants' solicitors announced that they intended to admit the truth of said plea of license, and withdraw their suit accordingly, and requested deponent's counsel meantime not to file the proposed answer, as if filed it would operate prejudicially to the business of the complainants by inciting others to litigate the Cummings patent, and also because the suit would never be decided on the other issues presented, and that thereupon a further indefinite extension of time was given for filing said answer, and negotiations entered into, by virtue of which on the 18th day of October, 1872, the said suit was terminated by the two stipulations hereto annexed, marked respectively "Schedule B, stipulations No. 1;" and "Schedule C, stipulation No. 2;" of which the former is on file in said suit, and the latter is in possession of deponent.

Signed, THOS. B. GUNNING.

Subscribed and sworn to before me this 26th day of October, 1872. FRANK RUDD, *Notary Public.*

[NOTARIAL SEAL.] N. Y. County.

Schedule B.

U. S. CIRCUIT COURT,
Southern District of New York.

The Goodyear Dental Vulcanite Company and Josiah Bacon,

versus

Thomas B. Gunning.

It appearing to the complainants that the assignors of the complainants have heretofore entered into an arrangement which equitably entitles the defendant to use the improvement

described in the letters patent, for the infringement of which, this suit is brought in his profession as a dentist, on motion of Lee & Alvord, complainants' solicitors, and on the annexed consent of the solicitors of the defendant. It is ordered that the bill in this cause be and the same is hereby dismissed; and that the complainant pay to the defendant his costs to be taxed.

New York, Oct. 18th, 1872. L. B. WOODRUFF,
(A copy.) *Circuit Judge.*

The significance of the above seems to me to be, when stripped of all legal tricks, that the Vulcanite Company were fearful of the result of this suit against Dr. Gunning, and therefore took advantage of the fifth count in the defendant's answer—which claimed to be a partial defense only—to dismiss the suit at their own costs. Now, as this partial defense of Dr. Gunning's only claimed that his license protected him against the Vulcanite Company up to the 6th of May, and as he no where denies having used rubber since that time, the absurdity of pretending to dismiss the suit upon that ground is at once apparent. The members of the profession can draw their own inferences from the above. We are in daily expectation of hearing more from the Gardner case, which will probably be soon settled by final action of the Supreme Court. J.

LATER.—We have just learned that the case in the Supreme Court has not yet been reached, but probably will be soon after the Holidays. J.

A CARD FROM JOHNSTON BROS.

Owing to the difficulty found in keeping the "back-action attachment" of the Morrison engine in order, we have now discontinued making it, or furnishing it with the engine. We have now nearly completed a new hand piece, fitted to prevent the burs from slipping from the tool-holder, or from being loosened therefrom while in use. It will be put on all Morrison engines made hereafter. This will be advertised in the next number of this JOURNAL. JOHNSTON BROS.

THE PHYSICIAN'S VISITING LIST for 1873. Published by Lindsay & Blackiston, Philadelphia.

This little publication is too well known to require an extended notice from us. It makes its appearance this year in its usual neat and appropriate form, admirably adapted for the purpose for which it is designed. Cannot these enterprising publishers supply the Dental profession with an appointment *book*, as well adapted to the wants of the dentist as this is to the physician? E.

ERRATA.—On page 469, glycerine ʒi, should read glycerine ʒi.

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